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ANNEX

THE

NAUTICAL ALMANAC

AND

ASTRONOMICAL EPHEMERIS

FOR THE YEAR

1829.

PUBLISHED BY ORDER OF THE

COMMISSIONERS OF LONGITUDE.

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ГПНТБ
МИНТС
НЕМАОМК

ADVERTISEMENT.

In continuing the annual publication of the Nautical Almanac, the Board of Longitude has been more anxious to attain the highest possible degree of accuracy in the execution of those computations, which have hitherto been considered as requisite for the purposes of navigation, than to add very materially to their number or extent. It has, however, been thought proper to annex to the Almanac a correct Table of Refractions, a Table of Second Differences, and the true or apparent Places of Sixty Principal Fixed Stars, for every ten days of the year, corrected for precession, aberration, and nutation.

The Table of Refractions is computed by a very simple formula, derived originally from theory, and adapted to the results of the most accurate observations, which have been found to justify the slight deviation from the French Tables, that it exhibits in the mean value of the refraction. The barometrical and thermometrical corrections are a little more at variance with the common mode of computation, and they approach in some degree, for the lower altitudes, to the rules which Bradley had inferred from observation alone. The places of the Stars have been principally calculated from the Tables of Dr. Maskelyne, Dr. Pearson, Mr. Groombridge, and Mr. Baily.

The Tables of the Planetary Motions, which have been employed, are chiefly those which are printed in the third volume of Professor Vince's Astronomy, with the omission only of some equations which do not materially affect the results: the place of the Moon has been calculated, since the beginning of 1821, from Burckhardt's Tables, which are of a later date; and

the Eclipses of Jupiter's Satellites, for 1824 and the following Years, from DELAMBRE's new Tables. For the Configurations, HALLEY's Tables have been hitherto employed; and they appear, with proper corrections of the epochs, to be sufficiently accurate for the purpose. The obliquity of the Ecliptic has been corrected, from the Observations of the Astronomer Royal, since the beginning of 1822.

The Moon's Right Ascension and Declination are computed to seconds, for the more convenient observation of the Moon's place on shore, and for the calculation of occultations and many other purposes. At the suggestion of a very distinguished practical navigator, the differences of the Sun's Declination from day to day have been added, for the convenience of seamen.

The attention of the BOARD has been particularly directed to the determination of the conditions, under which rewards are to be proposed for the improvement of Astronomical Tables and of Timekeepers; but all who are acquainted with the present state of this department of science must be aware, that a considerable time will be required, before it will be practicable to ascertain, with sufficient precision, how much has actually been effected, and how much is still required, with respect to both these objects. In the mean time it must be remembered, that the BOARD possesses ample powers to reward any improvement, which they may judge sufficiently important, either in the theory or in the practice of any part of Navigation or Nautical Astronomy. As far, however, as the existing Tables of the Sun and Moon have been examined, they appear to be already sufficiently accurate for every purpose of practical Astronomy.

EXTRACT FROM

DR. MASKELYNE'S PREFACE.

"MAYER's last Manuscript Tables of the Sun and Moon, and his curious and elaborate Theory of the Moon, were received by the Board of Longitude, after his decease, for which his Widow received a Reward of Three Thousand Pounds, by Act of Parliament; and the celebrated Mr. LEONARD EULER the Sum of Three Hundred Pounds, for having furnished the Theorems made use of by Mr. MAYER in his Theory. Both the Tables and Theory were printed under my inspection, and published in 1770.

"MAYER's Tables of the Sun were used in the Computations of the NAUTICAL ALMANAC, from its first beginning in 1767 to that of 1804, inclusive. From the NAUTICAL ALMANAC of 1767 to that of 1776, both inclusive, or the first ten years, MAYER's Lunar Tables were made use of. But from the NAUTICAL ALMANAC of 1777 to that of 1788, both inclusive, or the next twelve years, the Moon's Place was inserted as calculated from new Tables, improved from MAYER's Tables, composed by the late Mr. CHARLES MASON, under my direction, from calculations made by Order of the Board of Longitude upon the Series of Lunar Observations made by the late Dr. BRADLEY, and published in the NAUTICAL ALMANAC of 1774; in which new Tables the Epoch of the Moon's mean Longitude is 1″ less, that of the Apogee is 56″ less, and that of the ascending Node 45″ more than in MAYER's printed Tables, and the Equations are calculated to tenths of a second; and moreover, one new Equation is introduced, whose argument is the mean Distance of the Moon from the Sun's Apogee, and maximum is 16″,4. But from the NAUTICAL ALMANAC of 1789 to that of 1804, both inclusive, the Moon's Place was inserted as calculated from new Tables still further corrected by Mr. MASON, entitled by him, TABLES of 1780, as having been completed about that time, being rendered more exact than the former by the addition of eight Equations to the Number in MAYER's Table, taken from MAYER's Theory as to the Arguments, but settled as to the *Maxima*, from the said Observations, and the whole being calculated to Tenths of a Second. However the 18th Equation of these Tables was not used, as it was doubtful whether such an Equation should arise from the Theory of Gravity. Moreover, the Epochs of the Sun's Longitude in MAYER's Tables, and of the Moon's Longitude and mean

anomaly contained in MASON'S Tables of 1780, were diminished at the rate of 10″ in a hundred years, reckoned from the year 1756, in the Calculations of the NAUTICAL ALMANACS from 1797 to 1804, both inclusive. Also the Longitudes of the Stars, used in computing their distances from the Moon, were carried on from Dr. BRADLEY'S Catalogue of the year 1760, by subtracting 50″,35 from it, for each year between 1756 and 1760; to reduce that Catalogue back to the beginning of 1756, and then adding at the rate of 50″,20 for the Precession of the Equinoxes, for each year elapsed after 1756, and applying the Correction of Secular Motion derived from the 44th of the folio Tables annexed to the First Volume of my Astronomical Observations.

"The Distances of the Stars from the Moon had been computed, till the end of the EPHEMERIS of 1802, from a set of folio Tables, constructed for each Star, according to its respective Latitude in 1780; but the Distances in the EPHEMERIS from 1803 to 1808 were computed from the Latitudes corrected by my 45th Table, by making use of TAYLOR'S Tables of Logarithmic Sines and Tangents to every Second of the Quadrant.

"The Distances of the Moon from the nine principal fixed Stars are, in this Ephemeris, as they were from that of 1809, computed from their Longitudes and Latitudes, which I have settled from late Observations, and their annual variations, including their proper motions, by comparing them with Dr. BRADLEY'S places of them, settled about the year 1756. The Catalogue is inserted at the end of the Explanation of the Ephemeris, p. 162.

"The Calculations of the Planets' Places were made for the EPHEMERIS from 1780 to 1804, by the Tables contained in the Second Edition of M. DE LA LANDE'S Astronomy; and those of the Eclipses of Jupiter's Satellites were made from Mr. WARGENTIN'S Tables, which make a part of those Tables: excepting the Eclipses of Jupiter's Second Satellite, which were computed, from the EPHEMERIS of 1781 to that of 1804, from new Tables of Mr. WARGENTIN, published at the end of the Nautical Almanac of 1779.

"In the year 1792, came out the Third Edition of M. DE LA LANDE'S Astronomy, which he was pleased to make me a present of, containing new Tables of the Sun, Moon, and Planets, and of the Eclipses of Jupiter's Satellites. These Tables are constructed upon the best Observations, and upon the Physical Theories of M. LA GRANGE and M. DE LA PLACE, founded upon Sir ISAAC NEWTON'S Principles of Gravity. The Tables of the Sun were constructed by M. DE LAMBRE, entirely from my Observations: the Tables of the Moon are the same with Mr. CHARLES MASON'S Tables of 1780, only substituting M. DE LA PLACE'S Acceleration instead of MAYER'S, and diminishing the mean Secular Motion by 23″. The Tables of Mercury, Venus, and Mars, were constructed by M. LA LANDE. The Tables of Jupiter and Saturn were constructed by M. DE LAMBRE from the Theory of M. DE LA PLACE, who has accounted for the great Inequalities of their Motion

to great exactness. The Tables of the Planet Herschel, called the Georgian Planet by us, were also calculated by M. De Lambre, according to the Method of M. De la Place's Theory of Jupiter and Saturn. The Tables for calculating the Eclipses of Jupiter's Satellites were constructed by M. De Lambre upon M. De la Place's elaborate Theory, and agree with Observation to surprising exactness. The learned world are much indebted to Mr. Charles Mason, M. la Grange, M. De la Place, M. la Lande, and M. De Lambre, for these valuable improvements in the Astronomical Tables. May I flatter myself, that I also have contributed my share to this great Work, by directing Mr. Mason in the improvement of the Lunar Tables by precise Rules, and pointing out to him the Equations contained in Mayer's Theory, though omitted in his Tables, to be ascertained by Bradley's Observations, and by supplying a variety of Observations, from which, in conjunction with others, this great Work has been completed.

"In the year 1806, the French Board of Longitude published further improved Tables of the Sun by M. De Lambre; and improved Tables of the Moon by M. Burg, founded on M. De la Place's Theory, with the maxima of the equations stated according to my observations, and the epochs principally from my observations and Dr. Bradley's. In these, besides M. De la Place's other improvements, is introduced a new equation of the Moon's longitude, of the long period of 180 years, depending at once on the Moon's Apogee and Node and on the Sun's Apogee, whose maximum he states at 14″, but of great consequence in settling the mean motions of the Moon. Mr. Burg has introduced six new Equations, in addition to eight Equations pointed out by Mayer's Theory, but whose maxima had been settled by Mr. Mason, from Dr. Bradley's Observations. These Tables had been long expected, and our Board of Longitude had anticipated the important use which they should be applied to in the calculations of the Nautical Almanac.

"I was moreover furnished with several copies of the same, by the favour of the French Board of Longitude. These I immediately put into the hands of our computers; and the publication of the Nautical and Astronomical Almanac for 1813 came out, for the first time, distinguished with this considerable improvement.

"The epochs of these Tables having been adapted to the civil reckoning of time, and to the Midnight with which the last day of the former year ends, and the new one begins, instead of the noon of the last day of the former year, as generally used in Astronomical Tables, I tried to adopt this method for the Nautical Almanac, but afterwards thought it best to relinquish it, and to retain the astronomical time, fearing it would be attended with inconvenience, both in keeping the Register of the Greenwich Observations, and in puzzling the sailors by changing the method of using the Nautical Almanac.

"The Places of the Planets, and the Times of the Eclipses of Jupiter's Satellites, beginning in the year 1805, have been calculated from the Tables annexed to the third edition of M. la Lande's

Astronomy, and the Eclipses of the Satellites set down to mean time, instead of apparent time, as formerly.

"The Rev. SAMUEL VINCE, Plumian Professor of Astronomy at Cambridge, having had an early communication of the new French Tables, and of the errata discovered in them by the comparer of the Nautical Almanac and myself, and having also noted several errata himself, has lately re-published them in a neat, elegant, and accurate manner, according to astronomical time, together with the Tables of the Planets (taking those of Mars from M. LE FRANCAIS LA LANDE's Tables in the Connaissance des Tems of the 12th year) and the Eclipses of Jupiter's Satellites from the third edition of M. LA LANDE's Astronomy. These will be used for the calculations of the Nautical Almanac for succeeding years.

"All the Articles of the EPHEMERIS were computed by two separate Persons, and examined by a third, except the Moon's Longitude, Latitude, Right Ascension, Declination, Semidiameter, and Parallax, with its proportional Logarithm, which for Noon, were computed by one Person, and for Midnight by another, and the Truth of these Calculations ascertained by Means of Differences, which, for the Moon's Longitude, were carried as far as the Fourth Order.

"NEVIL MASKELYNE,

"ASTRONOMER ROYAL."

"GREENWICH,
September 25, 1810."

Anno 58^vo^ Georgii III. Regis, Cap. XX.

An Act for more effectually discovering the Longitude at Sea, and encouraging Attempts to find a *Northern* Passage between the *Atlantic* and *Pacific* Oceans, and to approach the *Northern* Pole. [8 May, 1818.]

WHEREAS by an Act passed in the Twelfth Year of her late Majesty Queen *Anne*, intituled, "An Act for providing a public Reward for such Person or Persons as shall discover the Longitude at Sea;" it was enacted, that Persons holding certain Public Offices therein stated, for the time being, and certain other Persons therein mentioned by Name, should be Commissioners for the Discovery of the Longitude at Sea, and for examining, trying, and judging of all Proposals, Experiments, and Improvements relating to the same: And whereas another Act was passed in the Twenty-sixth Year of the Reign of His late Majesty King *George* the Second, for rendering more effectual the last recited Act: And whereas by another Act passed in the Thirtieth Year of the Reign of His present Majesty, intituled, "An Act for continuing the Encouragement and Reward of Persons making certain Discoveries for finding the Longitude at Sea, or making other useful Discoveries and Improvements in Navigation, and for making Experiments relating thereto, and for adding a Commissioner to execute the several Acts for the Discovery of the Longitude at Sea," Persons holding certain other Offices, therein enumerated, for the time being, were added to and joined with the Commissioners appointed by the said first-mentioned Act: And whereas all the Persons mentioned by Name in the said first recited Act are long since deceased: And whereas by reason of the Residence at the Universities of certain Professors who are constituted Members of the Board of Commissioners aforesaid, and by there not being a Power of electing into the said Board any Persons but the said Official Commissioners and the said Professors, it often happens that there are no Persons, particularly versed in the Sciences of the Mathematics and Astronomy resident in London, and belonging to the said Board; and that divers Persons of great Skill and Ability, whose Services would be most beneficial to the Objects of the said Board, are by the said Constitution of the Board excluded therefrom: Be it therefore enacted by the King's most Excellent Majesty, by and with the Advice and Consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the Authority of the same, That the said recited Acts shall be and the same are hereby repealed.

II. And be it further enacted, That from and after the passing of this Act, the Lord High Treasurer of the United Kingdom of *Great Britain* and *Ireland*, or the First Commissioner for executing the said Office, the Lord High Admiral or First Commissioner for executing the Office of Lord High Admiral of the United Kingdom of *Great Britain* and *Ireland*, and such other Commissioners for executing the Office of Lord High Admiral of the United Kingdom of *Great Britain* and *Ireland*, as may be Flag Officers in His Majesty's Fleet, the Speaker of the House of Commons, the President of the Committee of Council for Trade and Plantations, the Governor of the Royal Hospital for Seamen at *Greenwich*, the Judge of the High Court of Admiralty, the Secretaries of the Treasury, the Secretaries of the Admiralty, the Comptroller of the Navy, the President and Three Fellows of the Royal Society, the Royal Astronomer at *Greenwich*, the *Savilian*, *Lucasian*, *Plumian*, and *Lowndian* Professors of the Mathematics and Astronomy at the Universities of *Oxford* and *Cambridge*, the Observer at the *Radcliffe* Observatory at *Oxford*, all now and for the time being, and Three other Persons well versed in the Sciences of Mathematics, Astronomy, or Navigation, to be annually selected, chosen, and named, as hereinafter provided, shall be Commissioners for discovering the Longitude at Sea, and for examining, trying, and judging all Proposals, Experiments, and Improvements relating to the same, and for rewarding Persons making useful Discoveries and Improvements in or connected with Navigation.

III. And be it further enacted, That the Three Members of the Royal Society, so to be Commissioners, shall be the Right Honourable *Charles* Lord *Colchester*, *Davies Gilbert*, Esquire, and Colonel *William Mudge*, and that in the event of any Vacancy by Death, Resignation, or Refusal to act, of any of the said Three Persons, or of any Person hereafter chosen to succeed them, such Vacancy shall be filled up by the Choice and Election of the President and Council of the Royal Society; and that the said Three other Commissioners shall be Doctor *William Hyde Wollaston*, and Doctor *Thomas Young*, and Captain *Henry Kater*, who shall continue Commissioners until the First Day of *January* One thousand eight hundred and twenty, after which Time the Three Persons to be the said last-mentioned Commissioners shall be annually, or as often as a Vacancy by Death, Resignation, or Refusal to act, may occur, selected, chosen, and named by the Lord High Admiral, or Commissioners for executing the Office of Lord High Admiral, and shall be Persons well versed in the Sciences of the Mathematics, Astronomy, or Navigation, and shall be generally resident in or near the City of *London*, and capable of attending at the Board of Commissioners, and of assisting in the Objects herein intrusted to the said Board.

IV. And whereas by the said recited Acts, and by divers other Acts passed from Time to Time, and all founded upon and referring to the said first-recited Acts, divers Duties and Authorities were

imposed and conferred upon the Commissioners constituted by the said recited Acts, and divers Sums of Money for various Purposes, and under different Conditions, were from Time to Time granted and provided to be employed and expended towards the Discovery of the Longitude at Sea, and for divers Purposes in such Acts mentioned, and for Rewards to such Persons as should ascertain the Longitude within certain Limits and Conditions therein specified; and for enabling the said Commissioners to cause a survey to be made of the Shores of *Great Britain* and *Ireland*, and ascertaining the Latitude and Longitude of the Capes, Promontories, and Headlands thereof: And whereas some of the Provisions of the said Acts have been repealed, and others thereof have expired; and it is expedient wholly to repeal the same, for the Purpose of re-enacting and conferring upon the new Commissioners such of the Powers, Authorities, and Duties at present vested in the old Commissioners, as are fit to be continued in force: Be it therefore enacted, That all and every Act, conferring any Duty, Authority, or Power, on the Commissioners constituted by the said first-recited Acts, shall be and are hereby repealed.

V. And whereas the Longitude hath been ascertained within certain of the Limits and Conditions specified in the said Acts: And whereas certain other of the Limits and Conditions still subsisting are considered as impracticable, and have never been tried: And whereas it may conduce to the Advancement of Science, and to the Honour and Interest of this Country, that fit and proportionate Rewards should be provided for Persons who shall ascertain the Longitude within certain new Limits and Conditions: And whereas it is expedient that such Limits and Conditions should not be immutably fixed by Act of Parliament, but should be regulated on scientific Principles by the said Commissioners for the Discovery of the Longitude, and should be varied from Time to Time according to the Progress of Discoveries and the Advancement of Science: Be it enacted, That the said last-mentioned Commissioners shall from Time to Time, as they may see proper, propose, by their Memorial to his Majesty in Council, to direct and establish Three Scales of proportionate Rewards to be paid to any Person or Persons who shall, by any Principle not already made public, ascertain the Longitude within Three corresponding Scales of Limit and Condition, such Rewards not exceeding the respective Sums of Five Thousand Pounds, Seven Thousand Five Hundred Pounds, and Ten Thousand Pounds; and if His Majesty in Council shall be pleased to sanction and approve such Proposal, then that the same shall be published in the *London Gazette*, and that the said Commissioners shall have full Power and Authority to inquire into and examine all Proposals which may be made for finding the Longitude; and if on reasonable Experiment, to be judged of and certified by the said Commissioners, it shall be found that the Longitude hath been ascertained within any of the said Three Scales of Limit and Condition, agreeably to the said Order in Council, it shall be lawful to them to pay or cause to be paid the proportionate Reward

assigned to the Scale within which such Discovery or Experiment shall have ascertained the Longitude.

VI. And whereas it is expedient that the said Commissioners should be enabled to expend certain Sums towards making Experiments of Instruments, Modes, or Proposals, and for making and publishing Observations, Calculations, and Tables for ascertaining the Longitude, or towards improving or correcting such as may have been already made, or for other Purposes useful to Navigation; Be it enacted, That they may pay or expend any Sum or Sums of Money, not exceeding One Thousand Pounds in any one Year, towards the making, correcting, or publishing any such Experiments, Modes, Observations, Calculations, or Tables.

VII. And whereas it is expedient that the said Commissioners should be enabled to cause to be ascertained, as accurately as may be, the Latitude and Longitude of Places whereof the exact Situation hath not been already sufficiently ascertained; Be it enacted, That they may expend or cause to be expended any Sum not exceeding in the whole One Thousand Pounds in any one Year for such Purpose.

VIII. And whereas it may happen that Proposals, Inventions, and Tables, or Corrections and Amendments of former Proposals, Inventions, or Tables, ingenious in themselves and useful to Science, and which may deserve Encouragement, though they do not come within the Limits and Conditions specified for the before-mentioned Rewards, may be made to the said Commissioners; and it is expedient that they should be enabled to bestow such moderate Rewards upon the Person or Persons who may have made such Proposal, Invention, or Correction; Be it therefore enacted, That the said Commissioners may pay or cause to be paid such Sum not exceeding Five Hundred Pounds to any one Person for any one Proposal or Invention, or Two Thousand Pounds in one Year, as they may consider the said Proposals, Inventions, Tables, or Corrections, to deserve.

IX. And whereas by an Act passed in the Eighteenth Year of His late Majesty King *George* the Second, intituled, "An Act for giving a public Reward to such Person or Persons, being His Majesty's Subject or Subjects, as shall Discover a North-west Passage through *Hudson's Streights* to the *Western* and *Southern* Oceans of *America*," a Sum of Twenty Thousand Pounds was provided for the Owner or Owners of any Ship or Vessel which should first find out and sail through such Passage; and the Persons holding certain Offices therein named, for the time being, were appointed Commissioners for the said Discovery: And whereas by an Act passed in the Sixteenth Year of the Reign of His present Majesty, intituled, "An Act for giving a public Reward to such Person or Persons, being His Majesty's Subject or Subjects, as shall discover a *Northern* Passage for Vessels by Sea between the *Atlantic* and *Pacific* Oceans, and also unto such as shall first approach by Sea within one Degree of the *Northern* Pole;" the Reward in the last-

recited Act was extended to the Commander or Commanders, Officers and Seamen, of any of His Majesty's Ships or Vessels, and to the Owner or Owners of any private Ship or Vessel which should find out and sail through any Passage by Sea between the *Atlantic* and *Pacific* Oceans, in any Direction or Parallel of the *Northern* Hemisphere to the North of the Fifty-second Degree of North Latitude; and further assigning a Reward of Five Thousand Pounds to the Commander or Commanders, Officers and Seamen, of any of His Majesty's Ships or Vessels, or the Owner or Owners of any private Ship or Vessel which should first approach within One Degree of the *Northern* Pole; and appointing the Commissioners of the Longitude to be Commissioners for executing this last recited Act: And whereas many Advantages, both to Commerce and Science, may be expected from granting such proportionate Rewards as well to such Person or Persons as may accomplish the Objects of the said Two last-mentioned Acts, and to such other Person or Persons as may approach thereto within certain Limits or Conditions: And whereas it is expedient that the Regulation of such Limits and Conditions, and the Decision, whether and how far such Object may have been accomplished, should be confided to the Commissioners for the Discovery of the Longitude at Sea appointed by this Act: Be it therefore enacted, That the said Two last-recited Acts shall be and they are hereby repealed.

X. And be it further enacted, That if any Ship or Ships, Vessel or Vessels, belonging to any of His Majesty's Subjects, or to His Majesty, shall first find out and sail through any Passage by Sea, between the *Atlantic* and *Pacific* Oceans, in any Direction or Parallel of the Northern Hemisphere, the Owner or Owners of such Ship or Ships, Vessel or Vessels, if belonging to any of His Majesty's Subjects, or the Commander or Commanders, Officers, Seamen, and Marines of such Ships or Vessels, if belonging to His Majesty, so first finding out and sailing through such Passage shall receive a Reward for such Discovery, of the Sum of Twenty Thousand Pounds.

XI. And whereas Ships employed both in the *Spitzbergen* Seas and in *Davis's* Streights may have Opportunities of approaching the *North* Pole: And whereas Approaches towards the *Northern* Pole may tend greatly to the Discovery of a Communication between the *Atlantic* and *Pacific* Oceans, as well as may be attended with many advantages to Commerce and Science: Be it therefore enacted, That if any Ship or Ships, Vessel or Vessels, shall approach within one Degree of the *Northern* Pole, the Owner of such Ship or Vessel, Ships or Vessels, if belonging to any of His Majesty's Subjects, or the Commander or Commanders, Officers, Seamen, and Marines, of any Ship or Ships, Vessel or Vessels, if belonging to His Majesty, so first approaching within One Degree of the *Northern* Pole, shall be entitled to receive a Reward of Five Thousand Pounds.

XII. And for the Encouragement of Persons who may attempt

the said Passage, or approach to the *Northern* Pole, but not wholly accomplish the same; Be it enacted, That the said Commissioners for discovering the Longitude at Sea may, by their Memorial, propose to His Majesty in Council to direct and establish proportionate Rewards to be paid to such Person as aforesaid who shall first have accomplished certain Proportions of the said Passage or Approach; and if His Majesty in Council shall be pleased to sanction and approve the said Proposal, then that the same shall be published in the *London Gazette;* and any Person or Persons accomplishing such Passages, or the specified proportions of them, shall be entitled, on the Award of the said Commissioners, to receive such total or proportionate Sums as may have been offered for the Object which he or they may have then accomplished.

XIII. And in order to ascertain who are the first Discoverers of the said *Northern* Passage into the *Pacific* Ocean, and who are the first Approachers to within One Degree of the *Northern* Pole, and to whom either the whole Rewards or the proportionate Rewards by this Act respectively given do belong; Be it further enacted, That the Commissioners for the Discovery of the Longitude at Sea be authorized and empowered to call for the respective Journal or Journals, Book or Books, and Papers, kept on board the respective Ship or Ships, Vessel or Vessels, of the Claimant or Claimants respectively; and also to examine upon Oath all such Persons as they the said Commissioners shall think proper, with regard to any Claim or Claims, as well any Person or Person produced by the respective Claimant or Claimants, or any other Person or Persons who may seem capable of giving any Information; which Oath the said Commissioners are hereby empowered and required to administer; and the said Commissioners being fully satisfied upon such Examination and Proof, that such *Northern* Passage is effectually discovered and sailed through, or that such Approach within One Degree of the *Northern* Pole, or any specified Proportion of the said Passage or Approach, shall have been made and accomplished, they are hereby authorized to pay or cause to be paid the said Rewards, or such Proportion of them as the Claimant or Claimants may under this Act, or under such Order in Council, be entitled to receive.

XIV. Provided always, and be it further enacted, That if the said Rewards, or either of them, shall be claimed by and adjudged to the Commander or Commanders, Officers, Seamen, and Marines, of any Ship or Ships, Vessel or Vessels, belonging to His Majesty, the same shall be disposed in favour of and distributed among such Commander or Commanders, Officers, Seamen, and Marines, in such Proportions as shall be directed by His Majesty in Council, and in no other manner.

XV. And be it further enacted, That the Executors, Administrators, and Assigns of any Person or Persons to whom any Sum whatsoever shall be awarded by the Commissioners for the Dis-

covery of the Longitude, shall be entitled to receive the same in the event of the Death of such Person or Persons.

XVI. And whereas the Publication of the Nautical Almanac, constructed by proper Persons, under the Directions of the said Commissioners for the Discovery of the Longitude at Sea, is of great Importance to the safety of Ships and Persons, and highly conducive to the general Interests of Commerce and Navigation; Be it therefore enacted, That it shall and may be lawful to and for the said Commissioners to cause such Nautical Almanacs, or other useful Tables, to be constructed, and to print, publish, and vend, or cause to be printed, published, and vended, any Nautical Almanac or Almanacs, or other useful Table or Tables, which they shall from Time to Time judge necessary and useful, in order to facilitate the Method of discovering the Longitude at Sea; any Law, Statute, exclusive Privilege, private Charter, or other Custom, to the contrary thereof notwithstanding.

XVII. And be it enacted, That no Person or Pesons shall print, publish, or vend, or cause to be printed, published, or vended, any Nautical Almanac or Almanacs, or other Table or Tables, constructed under the direction of the said Commissioners, without being first licensed by the said Commissioners; and if any Person or Persons not so licensed, or not being authorized by the Person or Persons so licensed by the said Commissioners, shall print, publish, or vend, or cause to be printed, published, or vended, any such Almanac or Almanacs, or other Table or Tables, every such Person or Persons shall, for every Copy of such Nautical Almanac or Table so printed, published, or vended, forfeit and pay the Sum of Twenty Pounds, to be recovered by Action of Debt, Bill, Plaint, or Information in any of his Majesty's Courts of Record at *Westminster*; and that one Moiety of such Penalty and Forfeiture shall be to His Majesty, His Heirs and Successors, and the other Moiety to him or them that shall prosecute, inform, and sue for the same.

XVIII. And be it further enacted, That the said Penalty or Forfeiture shall be sued, informed, and prosecuted for by the Secretary of the said Commissioners of the Longitude for the time being, or by some other Person or Persons authorized by the said Commissioners, and shall not be sued, informed, or prosecuted for by any other Person or Persons whomsoever, and that such Suits, Prosecutions, and Informations, shall not abate by reason of the Death of such Prosecutors or any of them, but shall be continued, in the case of a sole Plaintiff or Informer dying before Judgment obtained, in the Name of the Secretary of the said Commissioners for the Time being.

XIX. And be it further enacted, That no such Nautical Almanac or Almanacs, so published under the Directions of the said Commissioners, shall be subject or liable to any Stamp Duty whatsoever.

XX. And be it further enacted, That there shall be annually paid to each of the Three last-named Commissioners and their Successors, to be annually named according to the provisions of this

Act, such annual Sum as His Majesty, by any Order in Council, shall be pleased to direct.

XXI. And whereas it is necessary to continue the Appointment of a Secretary to the Board of Commissioners for discovering the Longitude: And whereas it is highly expedient to the Interests of Navigation, and the Honour of this Country, that the said Nautical Almanac should be accurately computed, compared, and published, and that the Method of finding the Longitude by Timekeepers should also be encouraged; and that the Timekeepers belonging to His Majesty for the Use of His Ships of War should be carefully examined and regulated: Be it further enacted, That some Person of competent Skill and Ability shall be nominated and appointed by the Lord High Admiral or Commissioners of the Admiralty to be Secretary to the said Board of Commissioners and for superintending, under the Directions of the Board in general, and the Astronomer Royal in particular, the due and correct Publication of the Nautical Almanac, and for taking care of and regulating such Timekeepers as may be intrusted to his care by the Lord High Admiral or Commissioners of the Admiralty.

XXII. And be it further enacted, That the said Secretary shall hold his said Office during the Pleasure of the Lord High Admiral or Commissioners of the Admiralty; and for his Trouble and Pains therein he shall receive such annual Salary as His Majesty, by any Order in Council, may please to direct; but if it shall so happen that a Person shall not be found competent to execute the Three several Duties of Secretary to the said Board, and of superintending the Publication of the Nautical Almanac, and the Care and Regulation of Timekeepers, it shall be lawful to the said Commissioners to propose to His Majesty in Council to divide the said Duties, and assign them to several Persons, and to apportion to each Person such Part of the Salary established for the performance of the united Duties as may seem to them fit and proportionate to the several Duty or Duties to be performed by such Person.

XXIII. And be it further enacted, That the said Salaries to the Three Annual Commissioners, and the said Secretary or Persons performing the last-mentioned Duties, shall be annually placed on the Ordinary Estimate of the Navy.

XXIV. And be it further enacted, That no Receipt of any Salary or Reward under this Act shall prevent any Officer entitled to any Military or Naval Half-pay from receiving such Half-pay in addition to any such Salary or Reward.

XXV. And be it further enacted, That the Commissioners for discovering the Longitude at Sea, shall, at the beginning of every Year, make an Estimate of the Sum or Sums which they shall deem to be necessary for executing the Purposes of this Act in such Year, which Estimate shall be transmitted to the Secretary of the Admiralty, and, on being approved or amended by the Lord High Admiral or Commissioners of the Admiralty, shall be placed on the Ordinary Estimate of the Navy.

XXVI. And be it further enacted, That any Sum or Sums of Money to be paid under the Authority of this Act shall be paid, upon Certificates under the Hands and Seals of the Commissioners for the Discovery of the Longitude at Sea, to the Commissioners of the Navy for the time being; and the Commissioners of the Navy shall forthwith make out a Bill or Bills for the Sum or Sums contained in such Certificate or Certificates, payable by the Treasurer of the Navy, and such Sum or Sums of Money the said Treasurer of the Navy is hereby required to pay immediately to the Person or Persons mentioned in the said Certificate or Certificates, out of any Money which shall be in his Hands unapplied for the Use of the Navy: Provided always, that all such Sums of Money as shall exceed the Sum of Five Thousand Pounds shall be certified under the Hands and Seals of Two-thirds at least of the said Commissioners, and all such Sums as shall exceed the Sum of One Thousand Pounds shall be certified under the Hands and Seals of the major part of them, and that all such Sums as shall not exceed One Thousand Pounds shall be certified under the Hands and Seals of any five or more of them; such Certificate being in every Case whatsoever signed by One at least of the following Commissioners; that is to say, the Lord High Treasurer of the United Kingdom of *Great Britain* and *Ireland*, or the First Commissioner of the Treasury, the Lord High Admiral of the United Kingdom of *Great Britain* and *Ireland*, or First Commissioner of the Admiralty, the Secretaries of the Treasury, and the Secretaries of the Admiralty.

XXVII. And be it further enacted, That in any other respects where any Power or Authority is vested in the Commissioners under this Act, the same may be exercised by any Five or more Commissioners at the Board assembled, in as full and ample a Manner as if the whole Commissioners were then and there present; provided always, that at every such Board one of the following Commissioners at the least shall be present: that is to say, the First or one other of the Commissioners, or one of the Secretaries of the Admiralty; and that also Three other of the following Commissioners at the least shall be present, that is to say, the President of the Royal Society, the Astronomer Royal, the Professors and Observer at the Two Universities, and the Three Commissioners annually elected and receiving Salaries as aforesaid.

XXVIII. And be it further enacted, That there shall be held at least Four stated Meetings of the said Commissioners within every Year, to be held on such Days as His Majesty by any Order in Council may appoint, and such other Meetings as from Time to Time may be necessary; of all which Meetings due notice shall be given to the said Commissioners respectively.

Anno Primo & Secundo Georgii IV. Regis.

CAP. II.

An Act to amend an Act, of the Fifty-eighth Year of His late Majesty, for more effectually discovering the Longitude at Sea, and encouraging Attempts to find a Northern Passage between the *Atlantic* and *Pacific* Oceans, and to approach the *Northern Pole*. [23d February, 1821.]

WHEREAS by an Act passed in the Fifty-eighth Year of His late Majesty, intituled, *An Act for more effectually discovering the Longitude at Sea, and encouraging Attempts to find a Northern Passage between the* Atlantic *and* Pacific *Oceans, and to approach the* Northern Pole, it was enacted, that if any Ship or Ships, Vessel or Vessels, belonging to any of His Majesty's Subjects, or to His Majesty, shall first find out and sail through any Passage by Sea between the *Atlantic* and *Pacific* Oceans, in any Direction or Parallel of the Northern Hemisphere, the Owner or Owners of such Ship or Ships, Vessel or Vessels, if belonging to any of His Majesty's Subjects, or the Commander or Commanders, Officers, Seamen, and Marines, of such Ships or Vessels, if belonging to His Majesty, so first finding out and sailing through such Passage, shall receive a Reward for such Discovery of Twenty Thousand Pounds: And whereas it was further enacted, that if any Ship or Ships, Vessel or Vessels, should approach within One Degree of the *Northern Pole*, the Owner of such Ship or Vessel, Ships or Vessels, if belonging to any of His Majesty's Subjects, or the Commander or Commanders, Officers, Seamen, and Marines, of any Ship or Ships, Vessel or Vessels, if belonging to His Majesty, so first approaching within One Degree of the *Northern Pole*, should be entitled to receive a Reward of Five Thousand Pounds: And whereas it was further enacted, for the Encouragement of Persons who may attempt the said Passage, or approach to the *Northern Pole*, but not wholly accomplish the same, that the Commissioners for discovering the Longitude at Sea, might by their Memorial propose to His Majesty in Council to direct and establish proportionate Rewards to be paid to such Persons as aforesaid, who shall first have accomplished certain Proportions of the said Passage or Approach; and if His Majesty in Council should be pleased to

sanction and approve the said Proposal, then that the same should be published in the *London Gazette*, and any Person or Persons accomplishing such Passages, or the specified Proportions of them, should be entitled on the Award of the Commissioners to receive such total or proportionate Sums as may have been offered for the Object which he or they may have been accomplished: And whereas Doubts have arisen whether such proportionate Rewards be over and above the said Sums of Twenty Thousand and Five Thousand Pounds respectively, or only Parts and Proportions of the said Sums: For the removal of all such Doubts, be it enacted by the King's most Excellent Majesty, by and with the Advice and Consent of the Lords Spiritual and Temporal, and Commons in this present Parliament assembled, and by the Authority of the same, That from and after the passing of this Act, such proportionate Rewards shall be held and taken to be Proportions and Parts only of the said Sums of Twenty Thousand and Five Thousand Pounds respectively, and that such proportionate Rewards as His Majesty may be pleased hereafter to direct and establish by His Order in Council under the said Act, shall be Parts and Proportions only of the said Sums, so that no more than the said respective Sums of Twenty Thousand and Five Thousand Pounds shall be paid or payable under such Order in Council, for the Accomplishment of the Whole of the said Passage or Approach respectively, whether the same shall be attempted or accomplished by Proportions or Parts, or by One Voyage only.

II. And be it further enacted and declared, That it shall and may be lawful for His Majesty in Council to revoke, annul, alter, or amend, as from Time to Time may seem necessary and proper, any Order or Orders in Council already made, or hereafter to be made, under the Authority of the said recited Act or of this Act.

ORDER IN COUNCIL.

At the Court at *Carlton House*, the 23d *February*, 1821.

Present, The KING'S MOST EXCELLENT MAJESTY, In Council.

WHEREAS there was this Day read at the Board a Memorial from the Commissioners for discovering the Longitude at Sea, in the Words following: viz.

"Whereas by an Act of the Fifty-eighth Year of His late Majesty King *George* the Third, intituled, "An Act for more effectully discovering the Longitude at Sea, and encouraging attempts to find a Northern Passage between the *Atlantic* and *Pacific* Oceans, and to approach the *Northern Pole*;" and by another Act of the present Session of Parliament to amend the said Act, it is provided that for encouragement of Persons who may attempt the said Passage, or approach to the *Northern Pole*, but not wholly accomplish the same, We the Commissioners for discovering the Longitude at Sea, may by Our Memorial propose to Your Majesty in Council, to direct and establish proportionate Rewards to be paid to such Person as aforesaid, who shall first have accomplished certain proportions of the said Passage or Approach:

"And whereas it appears that the progress of Discovery has already advanced on the Northern Coast of *North America*, and within the Arctic Circle, as far as One Hundred and Thirteen Degrees of West Longitude, or thereabouts, from *Greenwich*, but has not arrived Northwards, according to any well authenticated Accounts, so far as Eighty-one Degrees of North Latitude:

"We your Memorialists beg leave most humbly to respesent these particulars for Your Majesty's Consideration, and to submit, with all humility, whether Your Majesty may not be graciously pleased to establish the following Scale of Rewards, to be allotted according to the intentions of the said Acts.

	£.
"1. To the first Ship belonging to any of Your Majesty's Subjects, or to Your Majesty, that shall reach the Longitude of 130° West from *Greenwich*, by sailing within the Arctic Circle,	5,000.
"To the first Ship as aforesaid that shall reach the Longitude of 150° West from *Greenwich*, by sailing within the Arctic Circle, a further Sum of	5,000.
"To the first Ship as aforesaid, that shall reach the *Pacific* Ocean by a North-West Passage, the further Sum of	10,000.
"2. To the first Ship as aforesaid, that shall reach to 83° of North Latitude	1,000.
To 85° a further Sum of	1,000.
To 87° a further Sum of	1,000.
To 88° a further Sum of	1,000.
To 89° or beyond, a further Sum of	1,000.

"And if Your Majesty should graciously approve these proposals, We further, with all humility, submit whether Your Majesty would not be pleased by your Order in Council to revoke, cancel, and annul His late Majesty's Order in Council of the 19th March, 1819, establishing the Scale of Rewards therein contained for the accomplishment of certain proportions of the said Passage or Approach."

His Majesty, having taken the said Memorial into consideration, was pleased, by and with the advice of His Privy Council, to approve thereof; and His Majesty doth hereby establish the Scale of Rewards proposed in the said Memorial.

And His Majesty is further pleased, by and with the advice aforesaid, to revoke, cancel, and annul the Order in Council of the Nineteenth of March, 1819, establishing the Scale of Rewards therein contained; and the same is hereby revoked, cancelled, and annulled accordingly.

JAMES BULLER.

By the COMMISSIONERS appointed by the Act of the Fifty-eighth Year of His late Majesty, King *George* the Third, intituled, "An Act for more effectually discovering the Longitude at Sea; and encouraging Attempts to find a Northern Passage between the *Atlantic* and *Pacific* Oceans, and to approach the *Northern Pole*."

WE do hereby, in pursuance of the Powers vested in us by the said Act, license, authorize, and empower you to print the Nautical Almanacs and Astronomical Ephemerides for the Years 1825 to 1831; together with such other useful Tables for facilitating the Methods of discovering the Longitude at Sea, as have been, or may be constructed under our Direction, and which will be delivered to you by or by the Direction of JOHN POND, Esq. His Majesty's Astronomer Royal at *Greenwich*; for all which this shall be your sufficient Warrant; reserving to ourselves, nevertheless, and to our Successors, Commissioners of the aforesaid Board, or to the proper Part of them, Power to revoke and annul the Appointment hereby made, by Writing signed by us or them, whenever we or they shall see Occasion. Given under our Hands, the Seventh Day of *February*, 1822.

THOMAS TURTON.
HENRY KATER.
THOMAS F. COLBY.
W. LAX.
S. P. RIGAUD.
H. DAVY.
DAVIES GILBERT.
JOHN F. W. HERSCHEL.
H. HOTHAM.
J. W. CROKER.
JOHN BARROW.
W. H. WOLLASTON.
JOHN POND, A.R.
ROBT. WOODHOUSE.

By Command,

THOMAS YOUNG, *Secretary*.

To Mr. Thomas Bensley, Printer,
Crane Court, Fleet Street.

By the COMMISSIONERS appointed by the Act of the Fifty-eighth Year of His late Majesty, King *George* the Third, intituled, "An Act for more effectually discovering the Longitude at Sea; and encouraging Attempts to find a Northern Passage between the *Atlantic* and *Pacific* Oceans, and to approach the *Northern Pole*."

WE do hereby, in pursuance of the Powers vested in us by the said Act, license, authorize, and empower you to publish and vend, and cause to be published and vended, all such Nautical Almanacs and Astronomical Ephemerides, and such other useful Tables, constructed under our Direction, as have hitherto been printed, or shall hereafter be printed for the several Years next ensuing, down to the Year 1831 inclusive. For all which this shall be your sufficient Warrant; reserving to ourselves, nevertheless, and to our Successors, Commissioners of the said Board, or to the proper Part of them, Power to revoke and annul the Appointment hereby made, by Writing signed by us or them, whenever we or they shall see occasion. Given under our Hands the Seventh Day of *February*, 1822.

HENRY KATER.
THOMAS F. COLBY.
ROBT. WOODHOUSE.
THOMAS TURTON.
JOHN F. W. HERSCHEL.
H. HOTHAM.
J. W. CROKER.
JOHN BARROW.
H. DAVY.
DAVIES GILBERT.
S. P. RIGAUD.
W. LAX.

By Command,

THOMAS YOUNG, *Secretary.*

To Mr. John Murray, Bookseller,
Albemarle Street.

PRINCIPAL ARTICLES

OF

THE ALMANAC OF 1829.

Chronological Cycles.	
Dominical Letter - - - -	D
Lunar Cycle, or Golden Numb.	6
Epact - - - - - - - - -	25
Solar Cycle - - - - - -	18
Roman Indiction - - - -	2
Julian Period - - - -	6542

Ember Days.	
March - -	11, 13, and 14.
June - -	10, 12, and 13.
September	16, 18, and 19.
December	16, 18, and 19.

MOVEABLE FEASTS.

Septuagesima Sunday - -	Feb. 15	Low Sunday - - - - - -	Apr. 26
Quinq. or Shrove Sunday,	Mar. 1	Rogation Sunday - - -	May 24
Ash Wed. or 1 Day of Lent,	Mar. 4	Asc. Day, or Holy Thurs.	May 28
Mid-Lent Sunday - - - -	Mar. 29	Whit Sunday - - - - -	June 7
Palm Sunday - - - - - -	Apr. 12	Trinity Sunday - - - - -	June 14
EASTER DAY - - - -	Apr. 19	Advent Sunday - - - -	Nov. 29

TERMS.

	London.		*Oxford.*		*Cambridge.*	
Names	Begins	Ends	Begins	Ends	Begins	Ends
Hilary, or Lent,	Jan. 23	Feb. 12	Jan. 14	Apr. 11	Jan. 13 / Div. Feb. 25 Midn.	Apr. 10
Easter,	May 6	June 1	April 29	June 6	April 29 / Div. June 4 Noon.	July 10
Trinity,	June 19	July 8	June 10	July 11		
Michael.	Nov. 6	Nov. 28	Oct. 10	Dec. 17	Oct. 10 / Div. Nov. 12 Midn.	Dec. 16

Oxford Act July 7.——Camb. Commencement July 7.

ECLIPTIC AND EQUINOCTIAL.

Obliquity of the Ecliptic.	1829.	Equation of Equinoctial Points.

Mean Obliquity 23°. 27′. 42″,9 Jan. 1.

° ′ ″			″
23. 27. 33, 1	True Obliq.	Jan. 1.	+ 3, 8
23. 27. 33, 6		Apr. 1.	+ 2, 3
23. 27. 32, 7		July 1.	+ 0, 7
23. 27. 33, 4		Oct. 1.	— 0, 6
23. 27. 32, 6		Dec. 31.	— 2, 2

SOLAR AND LUNAR ECLIPSES IN THE YEAR 1829.

March 20. *The MOON eclipsed, invisible at Greenwich.*

	H. M.
Beginning of the Eclipse	0. 49
Ecliptic ☌	1. 51
Middle	2. 0½
End of the Eclipse	3. 11½

Digits eclipsed, 4°. 29′, on the ☽'s northern Limb, or from the southern side of the ☉'s shadow.

April 3. *The SUN eclipsed, invisible at Greenwich.*

♂ at 10ʰ. 21½ᵐ, in Long. 0ˢ. 13°. 53¾′, ☽'s Lat. 35½′ S.

⊙ will be centrally eclipsed on the Meridian, at 9ʰ. 56½ᵐ, in Long. 149°. 6½′ W., and Lat. 32°. 15′ S.

Sept. 12. *The MOON eclipsed, partly visible at Greenwich.*

	H. M.
Beginning of the Eclipse	17. 25
☽'s upper limb sets	17. 38¾
Ecliptic ☌	18. 29½
Middle	18. 37
End of the Eclipse	19. 49

Digits eclipsed, 6°. 5′ on the ☽'s southern Limb, or from the northern side of the ☉'s shadow.

Sept. 27. *The SUN eclipsed, invisible at Greenwich.*

♂ at 14ʰ. 2¾ᵐ, in Long. 6ˢ. 4°. 39¼′, ☽'s Lat. 33¾′ N.

⊙ will be centrally eclipsed on the Meridian, at 13ʰ. 31¾ᵐ, in Long. 157°. 5½′ E., and Lat. 39°. 22¾′ N.

EXPLANATION OF THE CHARACTERS

USED IN THE

ASTRONOMICAL EPHEMERIS.

The PLANETS, and their relations.

☉ The Sun.	♂ Mars.
☽ The Moon.	♃ Jupiter.
☿ Mercury.	♄ Saturn.
♀ Venus.	♅ Georgian.
⊖ The Earth.	

☊ A Planet's Ascending Node.

☋ The Descending Node.

☌ Conjunction, or Planets situated in the same Longitude.

□ Quadrature, or Planets situated in Longitudes differing 3 Signs from each other.

☍ Opposition, or Planets situated in opposite Longitudes, or differing 6 Signs from each other.

N. North.	Inf. Inferior.	Im. Immersion.
S. South.	Sup. Superior.	Em. Emersion.

SIGNS of the ZODIAC.

First	♈ Aries.	(0+..)	7th	♎ Libra.	(6+..)
2d	♉ Taurus.	1	8th	♏ Scorpio.	7
3d	♊ Gemini.	2	9th	♐ Sagittarius.	8
4th	♋ Cancer.	3	10th	♑ Capricornus.	9
5th	♌ Leo.	4	11th	♒ Aquarius.	10
6th	♍ Virgo.	5	12th	♓ Pisces.	11

ERRATA 1828.

Page.					
28,	☿'s Inf. ☌	*for*	$17^d.18\frac{1}{4}^h$	*read*	$17^d.8\frac{1}{4}^h$
72,	Configuration, 22d,	—	$_3$.	—	$\cdot_3$
75,	☉'s Hourly Motion, 1st,	—	2′. 33″, 0	—	2′. 23″, 0
78,	☽'s R. A. .... 1st, N.	—	334°. 9′. 36″	—	334°. 9′. 26″
	☽'s Declin.... 13th, N.	—	13. 56. 40	—	13. 56. 54
138,	Days ..... 31st, ...	—	1	—	31
	☽'s Declín.... 7th, M.	—	8°. 36′. 37″	—	18°. 36′. 37″
139,	31st, M. *read* Sem. 15′. 28″, Par. 56′. 45″, and P. L. 5013				
200,	☽ ♒, *read* Conj. $30^d.20^h.12^m.51^s$ and Time $30^d.19^h.34^m.38^s$				
201,	1 ☌ ♋, — Diff. Decl. 48′. 6″ and Near. Appr. 46′. 44″				
	2 ☌ ♋, — Diff. Decl. 24′. 33″ and Near. Appr. 23′. 50″				

AN

EASY METHOD OF FINDING

THE

LATITUDE AND TIME AT SEA

FROM THE OBSERVATIONS MADE FOR DETERMINING

THE

LONGITUDE BY THE LUNAR METHOD;

OR

(When the Time at Greenwich is given)

FROM THE OBSERVED ALTITUDES OF THE MOON AND SUN,

OR OF THE MOON AND A STAR;

TOGETHER WITH

THE APPLICATION OF IT TO FINDING THE SAME

FROM

THE OBSERVED ALTITUDES OF TWO STARS.

BY THE REV. W. LAX, A.M. F.R.S.

LOWNDES' PROFESSOR OF ASTRONOMY AND GEOMETRY
IN THE UNIVERSITY OF CAMBRIDGE.

1826.

AN

EASY METHOD OF FINDING

THE LATITUDE AND TIME AT SEA.

THE object of the following Problems is to enable the Mariner in general at any hour of the day, when the Sun and Moon are visible, and the distance between them is comprehended in the Nautical Almanac; or at any hour of the night, when the Stars are visible, and the horizon tolerably clear, to determine by a short and simple process the Latitude and Time at the Ship, and of course if the Time at Greenwich is either computed, as in Problem I., or shown by the chronometer, to ascertain at once the situation of his Ship. It will be proper to observe that Dr. BRINKLEY'S ingenious paper in the Nautical Almanac for 1825 first suggested what is here offered to the Public.

PROBLEM I.

Given the apparent Altitudes of the Moon and Sun, or of the Moon and a Star, and the true Distance between them, as deduced from the observed Altitudes and Distance in finding the Longitude by the Lunar Process, together with the Time at Greenwich, deduced by the same Process, to find the Latitude and Time at the Ship.

Call the Sun or Star *A*, and the Moon *B*. From the apparent, deduce the true, altitudes of *A* and *B*, and from thence their true zenith distances. Find also their North Polar distances, and if *A* is a star, its right ascension, and the supplement of the right ascension of the Sun, taking the North Polar distance and the right ascension of the Star from Table M, subjoined to these Problems.

To the suversed sine of the difference between the zenith distance of *A*, and the distance between *A* and *B*, add the versed sine of the zenith distance of *B*, and rejecting 2 from the first figure of the sum, find its logarithm, to which add the logarithms in the column of L.½ El.T. in Table XIX. in Mr. LAX'S Book,* corresponding to the zenith distance of *A*, and the distance between *A* and *B* (*see the remark below*), and taking the arc corresponding to the sum in the column of L. Rising, call it *C*.

To the suversed sine of the difference between the North Polar distance of *A*, and the distance between *A* and *B*, add the versed sine of the North Polar distance of *B*, and rejecting 2 from the first figure of the sum, find its logarithm, to which add the logarithms in the column of L.½ El.T. corresponding to the North Polar distance of *A*, and the distance between *A* and *B* (used above), and taking the arc corresponding to the sum in the column of L. Rising, call it *D*.

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* Published by the authority and at the expense of the Board of Longitude, with the following title.—"Tables to be used with the Nautical Almanac, for finding the Latitude and Longitude at Sea; with easy and accurate Methods of performing the Computations required for these Purposes. By the Rev. W. LAX, &c."

Take the sum or difference of *C* and *D*, according as the object nearest the meridian,* when they are on the same side of it, or as either of them, when they are on different sides of it, lies on the north or south side of the vertical passing through the other,† and call it (or its supplement to 360° if it exceeds 180°) *E*.

Note.—There is one exception to this rule, which occurs when the objects are on different sides of the meridian, and that on the west side precedes the other by more than 12^h, which is at once known by subtracting the right ascension of the former from that of the latter, increased by 24^h if less than that of the former. In this case the sum or difference of *C* and *D* must be taken, according as either of the objects lies on the *South* or *North* side of the vertical passing through the other.

Take from the column of L. Rising the logarithm corresponding to *E*, and add to it the logarithms in the column of L. Mid. T. corresponding to the zenith and North Polar distances of *A* (to be taken out when the logarithms in the column of L. ½ El. T. are taken out for these distances above), and rejecting the *tens* from the index of the sum, find its natural number, to which add the versed sine of the difference between the zenith and North Polar distances of *A*, and the sum will be the coversed or sucoversed sine of the Latitude, according as it is North or South.

Then if *A*'s distance from the meridian is either less than 5^h, or greater than 7^h,‡ add to the R. L. Sec. of the Latitude the logarithms in the column of L. Mid. T. corresponding to the arc *E*, and the zenith distance of *A* (used above) and the sum (10 being rejected from the index) will be the logarithm in the column of L. Mid. T. corresponding to the distance of *A* from the meridian. If *A* is the Sun, this will be the time from the nearest noon, but if it is a Star, the time must be deduced from this distance in the usual way.

If *A*'s distance from the meridian is neither less than 5^h nor greater than 7^h, find the time in the usual way from the Latitude, Declination, and Altitude.

Remark.—It is understood that in Table XIX. L. ½ El. T. & L. Mid. T. are written at the bottom of the page, under their respective columns; and the argument at the bottom increased by 90°, both in space and time, under the column of L. Rising; and that a column for minutes and seconds of Time is added to the right hand of the page, similar to that on the left: thus—

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* Which of the objects is nearest the meridian, when they are on the same side of it, will at once be known in the two first Problems, from its being stated in the Nautical Almanac whether the Moon is to the west or east of the other object; and in the third, from its being shown in Table N, subjoined to these Problems, which of the two stars is to the west of the other.

† There can never be any difficulty in ascertaining this when the objects are in a proper situation for determining the Latitude and Time by this method, (see the Scholium subjoined to the Problems), except perhaps when one of them is very near the zenith, and in such a case the object cannot be used until the uncertainty is removed by a change of its position.

‡ This, in the case of the Sun, will be known with sufficient accuracy (for ten minutes either more or less in these distances can make no material difference) from the estimated Time at the Ship. In the case of a Star, it will be determined (if not self-evident from the apparent position of the Star in the heavens) by adding together the estimated Time, the supplement of the right ascension of the Star, and the right ascension of the Sun, and rejecting the *twenty-fours* from the hours in the sum, which will be done with very little additional trouble, as the right ascension of the Star, and the supplement of the right ascension of the Sun, are previously found for the purpose of deducing the true Time at the Ship from the distance of *A* from the meridian.

		87°. 0′ 5ʰ. 48ᵐ			88°. 0′ 5ʰ. 52ᵐ			89°. 0′ 5ʰ. 56ᵐ				
′	ᵐ ˢ	L. ½ El. T.	L. Rising.	L. Mid. T.	L. ½ El. T.	L. Rising.	L. Mid. T.	L. ½ El. T.	L. Rising.	L. Mid. T.		
0	0. 0	0.92533	7.82614	9.07466	0.92500	7.83406	9.07499	0.92481	7.84184	9.07179	59	3.56
1	4	92532										
2	8											
58	3.52											
59	3.56	92501	83393	07499	92481	84171	07519	92474	84936	07526	0	0. 0
		R. L. Sec.	2°	R. L. Cos.	R. L. Sec.	1°	R. L. Cos.	R. L. Sec.	0°	R. L. Cos.	′	ᵐ ˢ
″	ˢ	Parts.	Parts.	Parts.	Parts.	Parts.	Parts.	Parts.	Parts.	Parts.	″	ˢ
0	0	1	0	0	0	0	0	0	0	0	60	4
15	1	0	3	0	0	3	0	0	3	0	45	3
60	4	0	13	1	0	13	0	0	13	0	0	0
		L. ½ El. T.	92°. 0′ 6ʰ. 8ᵐ	L. Mid. T.	L. ½ El. T.	91°. 0′ 6ʰ. 4ᵐ	L. Mid. T.	L. ½ El. T.	90°. 0′ 6ʰ. 0ᵐ	L. Mid. T.		

EXAMPLE I.

March 14, 1818, in North Latitude, the apparent altitude of the Sun was found to be 48°. 55′. 4 and of the Moon 24°. 43′. 37″, the true distance between them 86°. 16′. 45″, and the Time Greenwich 4ʰ. 53ᵐ. 52ˢ; the objects were on different sides of the Meridian, the former at a l distance from it than 5ʰ towards the West, and lying on the South side of the vertical pass through the latter: required the Latitude and Time at the Ship.—(See Example II. Problem X in the Book mentioned in page 3.)

° ′ ″	° ′ ″			
Tr.Z.D. *A*. 41. 4. 55	Zenith dist. *A* 41. 4. 55	.....	L. ½ El. 1. 10707	L. Mid.. 8. 89278
——— *B*. 64. 29. 7	Dist. *A* & *B*. . 86. 16. 45	.....	——— 0. 92566	14
N.P.D. *A*. 92. 33. 46				
——— *B*. 63. 35. 59	Difference... 45. 11. 50	Suv. 1704634		
		35		
	Zenith dist. *B* 64. 29. 7	Ver. 569226		
		31		
		N°.. 273926	Log... 5. 432592	
			40	
	Arc *C*.....54. 23. 15	.....	L. Ris. 7. 47036.	
	N. P. dist. *A*. 92. 33. 46	.....	L. ½ El. 0. 92517	L. Mid.. 9. 07482
	Dist. *A* & *B*. 86. 16. 45	.....	——— 0. 92566	
	Difference... 6. 17. 1	Suv. 1993960		
		32		
	N. P. dist. *B*.. 63. 35. 59	Ver. 555104		
		256		
		N° .549352	Log... 5. 739810	
			40	
	Arc *D*..... 63. 19. 30	.....	L. Ris. 7. 59068.	
	E (*D*−*C*)... 8. 56. 15	.....	.....	L. Ris.. 5. 93336
				43
		N° .. 7971	.....	Log.... 3. 90153
	Diff. Z. and N. P. D. *A* 51. 28. 51	Ver.. 377030		
		194		
	Lat. required 37. 56. 16	Cov.. 385195	.....	R.L.Sec. 1. 02782
				2
	E.....	.....	.....	L. Mid.. 8. 26639
				21
	h m s			
	Time required 0. 29. 45	.....	.....	—(*a*+*b*) 8. 18736

EXAMPLE II.

May 24, 1825, in North Latitude, the apparent altitude of Pollux was found to be 11°. 32′. 10″, of the Moon 11°. 23′. 20″, the true distance between them 41°. 38′. 40″, and the Time at Greenwich $14^h.\ 2^m.\ 0^s$; both objects were to the West of the Meridian, the former at a great distance from it than 7^h, the latter nearer the Meridian and lying on the South side of the vertical passing through the former: required the Latitude and Time at the Ship.

° ′ ″	° ′ ″			
Tr.Z.D. *A*. 78. 32. 24	Zen. dist. *A*. 78. 32. 24	.....	L. ½ El. 0. 93347	L. Mid.. 9. 06
——— *B*. 77. 43. 27	Dist. *A* & *B*. 41. 38. 40	.....	——— 1. 10220 5	
N.P.D. *A*. 61. 33. 36	Difference... 36. 53. 44	Suv. 1799685 46		
——— *B*. 83. 26. 44	Zen. dist. *B*. 77. 43. 27	Ver. 787254 128		
h m s		N°.. 587113	Log... 5. 768712 9	
R. Asc. *A*. 7. 34. 37,3	Arc *C*..... 84. 20. 46	.....	L. Ris. 7. 80444.	
Sup.R.A.⊙ 19. 54. 2,0	N. P. dist. *A*.. 61. 33. 36	.....	L. ½ El. 0. 98057 3	L. Mid.. 9. 01
	Dist. *A* & *B*.. 41. 38. 40	.....	——— 1. 10220 4	
	Difference... 19. 54. 56	Suv. 1940190 6		
	N. P. dist. *B*. 83. 26. 44	Ver. 885641 212		
		N°.. 826049	Log.... 5. 916980 26	
	Arc *D*..... 114. 26. 15	.....	L. Ris.. 7. 99985.	
	E (*D*−*C*).. 30. 5. 29	.....	.....	L. Ris.. 6. 97
	Diff. Z. and N. P. D. *A*. 16. 58. 48	N°.. 116139 Ver. 443526 66	.....	Log.... 5. 0
	Lat. required 57. 10. 7	Cov. 159731	.....	R.L.Sec. 1. 1
	E.....	.....	.....	L. Mid. 8. 7
	h m s			
	Dist. Merid. *A*. 7. 39. 58,5	.....	.....	——— 9. 0
	Right Asc. *A*.. 7. 34. 37,3			
	Sup. R. A. ⊙. 19. 54. 2,0			
	Time required 11. 8. 37,8			

EXAMPLE III.

nary 13, 1825, in South Latitude, the apparent altitude of Spica Virginis was found to be 5°. 6′. 55″, and of the Moon 5°. 58′. 49″, the true distance between them 26°. 47′. 39″, and he Time at Greenwich $3^h.10^m$; both objects were to the East of the Meridian, the former at either a less distance from it than 5^h, nor a greater than 7^h, being nearer to it than the latter, nd lying on the North side of the vertical passing through the latter: required the Latitude and ime at the Ship.

..D. *A*. 74. 56. 34	Zenith dist. *A*. 74. 56. 34	.....	L. ½ El.	0.93990 1 ..	L.Mid. 9.06010 1
— *B*. 83. 12. 20	Dist. *A* and *B* 26. 47. 39	.....	———	1.27068 9	
..D. *A*. 100. 14. 39	Difference.... 48. 8. 55	Suv. 1667182 18			
— *B*. 110. 38. 28					
h m s					
sc. *A*. 13. 15. 59, 2	Zenith dist. *B*. 83. 12. 20	Ver. 881596 96			
R.A. ⊙ 4. 19. 39, 1					
		N°.. 548892	Log.....	5.739414 73	
	Arc *C*..... 105. 7. 30	.....	L. Ris...	7.95017.	
	N. P. dist. *A*. 100. 14. 39	.....	L. ½ El..	0.93171 2 } (*a*)	L.Mid. 9.06827 1
	Dist. *A* & *B*. 26. 47. 39	.....	——..	1.27068 9	
	Difference... 73. 27. 0	Suv. 1284573 279			
	N. P. dist. *B*. 110. 38. 28	Ver. 1352386 127			
		N°.. 637365	Log.....	5.804344 44	
	Arc *D*..... 115. 54. 7	.....	L. Ris..	8.00689.	
	C + *D*..... 221. 1. 37	*E* 138°. 58′. 23″	.....	L. Ris.	8.09355 7
	Diff. Z. and N. P. D. *A*. 25. 18. 5	N°. 1667285 Ver. 95917 10	.....	Log..	6.22201
	Lat. required. 49. 44. 53	Suc. 1763212	R. L. Sec.	1.11428 13	
	Declination *A* 10. 14. 39	.....	———	0.93173 (*a*)	
	Mer. Z. dist. *A* 39. 30. 14	Suv. 1771440 142			
	True alt. *A*.. 15. 3. 26	Cov. 740057 154			
		N°. 511793	Log. ...	5.709015 78	
	h m s	h m s			
	Dist. Mer. *A*, W. 18. 45. 0, 0	Sup. 5. 15. 0, 0	L. Ris..	7.75523.	
	Right ascen. *A* 13. 15. 59, 2				
	Sup. R. A. ⊙. 4. 19. 39, 1				
	Time required 12. 20. 38, 3				

EXAMPLE IV.

August 2, 1820, in North Latitude, the apparent altitude of the Sun was found to be 8°. 43′. 15″, and of the Moon 9°. 6′. 4″, the true distance between them 68°. 11′. 24″, and the Time at Greenwich 12ʰ. 2ᵐ; the objects were on different sides of the Meridian, the former at a greater distance from it to the West than 7ʰ, and lying on the North side of the vertical passing through the latter, which it preceded more than 12ʰ: required the Latitude and Time at the Ship.

° ′ ″	° ′ ″				
Tr.Z. dist. *A*. 81. 22. 40	Z. dist. *A*.. 81. 22. 40	.....	L. ½ El. 0. 92967	L. Mid... 9. 07031	
——— *B*. 60. 3. 22					1
N. P. D. *A*. 72. 22. 24	Dist. *A* & *B*. 68. 11. 24	.....	——— 0. 95697		
——— *B*. 64. 37. 50			3		
	Diff. 13. 11. 16	Suv. 1973578			
		50			
	Z. dist. *B*... 80. 3. 22	Ver. 827211			
		105			
		N°.. 800944	Log... 5. 903578		
			24		
	Arc *C*. 82. 40. 37	.....	L. Ris.. 7. 79027.		
	N. P. D. *A*. 72. 22. 24	.....	L. ½ El. 0. 94560	L. Mid... 9. 05436	
			2		2
	Dist. *A* & *B*. 68. 11. 24	.....	——— 0. 95697		
			3		
	Diff. 6. 11. 0	Suv. 1997314			
		23			
	N. P. D. *B*.. 64. 37. 50	Ver. 571328			
		219			
		N°.. 568884	Log... 5. 754966		
			65		
	Arc *D*..... 69. 4. 45	.....	L. Ris. 7. 65765.		
	E (*C*−*D*).. 13. 35. 52	.....	.....	L. Ris. .. 6. 29619	
					92
		N°.. 26413	.....	Log.....	4. 42181
Diff. Z. and N. P. D. *A*.	9. 0. 16	Ver.. 12310			
		13			
Lat. req^{d}...	74. 0. 1	Cor.. 38736	.....	R. L. Sec.	1. 48440
E.....	.....	.....	.....	L. Mid...	8. 44607
					46
	ʰ ᵐ ˢ				
Time req^{d} ..	8. 10. 2	.....	.....	———.	9. 00125

PROBLEM II.

Given the observed Altitudes of the Moon's and Sun's Limbs, or of the Moon's Limb and a Star, the Time at Greenwich, and the Distance between the Objects in the Nautical Almanac, immediately before and after this Time, to find the Latitude and Time at the Ship.*

Call the Sun or Star *A*, and the Moon *B*.

From the observed, deduce the true, altitudes of *A* and *B*, and from thence their true zenith distances. Find also their North Polar distances, and if *A* is a Star, its right ascension, and the supplement of the right ascension of the Sun, taking the North Polar distance and right ascension of the Star from Table M.

From the distances in the Nautical Almanac before and after the observation deduce the distance at the moment of observation, and then proceed to find the Latitude and Time at the Ship as in Problem I.

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* It will be sufficient for the purposes of this Problem if the Time at Greenwich is known within two or three minutes.

EXAMPLE I.

March 10, 1825, at $3^h.20^m$ at Greenwich, in South Latitude, the altitude of the Sun's lower limb was observed to be $40°.15'.41''$, and of the Moon's upper limb $34°.40'.42''$, the observer's eye being 20 feet above the surface of the Sea; the objects were on different sides of the Meridian, the former at a less distance from it than 5^h towards the East, and lying on the North side of the vertical passing through the latter; and the distances between them, in the Nautical Almanac for 3^h and 6^h, were $101°.52'.31''$ and $100°.19'.56''$ respectively: required the Latitude and Time at the Ship.

Tr. Z. dist. *A*. 49. 33. 37	Z. dist. *A*...	49. 33. 37	.....	L. ½ El. 1. 04327 4	L. Mid.. 8. 95663 6
——— *B*. 54. 53. 20	Dist. *A* & *B*.	101. 42. 14	.....	——— 0. 93386 1	
N. P. D. *A*. 94. 2. 27	Diff.....	52. 8. 37	Suv.	1613596 88	
——— *B*. 113. 13. 59	Z. dist. *B*...	54. 53. 20	Ver.	424757 79	
Dist. *A* & *B*. 101. 42. 14			N°...	38520	Log... 4. 5856
	Arc *C*.....	18. 30. 8	.....	L. Ris.	6. 56287.
	N. P. D. *A*..	94. 2. 27	.....	L. ½ El.	0. 92582 L. Mid.. 9. 07417
	Dist. *A* & *B*.	101. 42. 14	.....	———	0. 93386 1
	Diff.....	7. 39. 47	Suv.	1991061 8	
	N. P. D. *B*.	113. 13. 59	Ver.	1394210 267	
			N°.	1385546	Log... 6. 141606 14
	Arc *D*.....	114. 44. 15	.....	L. Ris..	8. 00131.
	E (*C*+*D*)..	133. 14. 23	.....	.....	L. Ris.. 8. 07597 13
	Diff. Z. and N. P. D. *A*.	44. 28. 50	N°.	1279265	..... Log.... 6. 10696
			Ver.	286342 170	
	Lat. required	34. 27. 23	Suc.	1565777	..... R. L. Sec. 1. 00849 3
	E.....		.....	.....	..... L. Mid.. 8. 93761 2
	Time req^d on 9th	h m s 21. 10. 59	Sup...	h m s 2. 49. 1	..... ——— 8. 90289

EXAMPLE II.

March 2, 1825, at 12h. 21m at Greenwich, in North Latitude, the altitude of Aldebaran was ol to be 9°. 54′. 31″, and of the Moon's lower limb 77°. 17′. 54″, the observer's eye being above the surface of the Sea; both objects were to the West of the Meridian, the former at a less distance from it than 5h, nor a greater than 7h, the latter nearer to it, and lying on the side of the vertical passing through the former; and the distances between them, as given Nautical Almanac, for 12h and 15h, were 67°. 44′. 47″ and 69°. 35′. 47″ respectively: requir Latitude and Time at the Ship.

Tr. Z. dist. *A*. 80. 15. 0	Z. dist. *A*... 80. 15. 0	.....	L. ½ El.	0.93104	L. Mid.
——— *B*. 12. 42. 57	Dist. *A* & *B*. 67. 57. 35	.....	———	0.95768 4	
N. P. D. *A*. 73. 51. 0	Diff..... 12. 17. 25	Suv. 1977045 37			
——— *B*. 77. 24. 2					
Dist. *A* & *B*. 67. 57. 35	Z. dist. *B*. .. 12. 42. 57	Ver.. 24466 60			
h m s					
R. Asc. *A*.. 4. 25. 54,0		N°... 1608	Log....	3.206287	
Sup. R. Asc. ⊙ 1. 5. 40,8					
	Arc *C*. 3. 24. 0	.....	L. Ris. .	5.09505.	
	N. P. dist. *A*. 73. 51. 0	.....	L. ½ El.	0.94219 4 (*a*)	L. Mid.
	Dist. *A* & *B*. 67. 57. 35	.....	———	0.95768 3	
	Diff..... 5. 53. 25	Suv. 1994704 16			
	N. P. dist. *B*. 77. 24. 2	Ver. 781857 9			
		N°.. 776586	Log....	5.890141 48	
	Arc *D*..... 82. 39. 37	.....	L. Ris..	7.79013.	
	E (*C*−*D*) .. 79. 15. 37	.....	.....		L. Ris.
		N°.. 770248	.....		Log...
	Diff. Z. and N. P. D. *A*. 6. 24. 0	Ver.. 6232			
	Lat. required 12. 54. 57	Cov. 776480	R. L. Sec.	0.93585 3	
	Dec. *A*..... 16. 9. 1	.....	———	0.94223 (*a*)	
	M. Z. dist. *A*. 3. 14. 4	Suv. 1998391 17			
	True alt. *A*.. 9. 45. 0	Cov. 830364 287			
		N°.. 829059	Log....	5.918554 31	
	h m s				
	Dist. Mer. *A*. 5. 33. 42,5	.....	L. Ris..	7.79669.	
	R. Asc. *A*. .. 4. 25. 54,0				
	Sup. R. As. ⊙ 1. 5. 40,8				
	Time req^{d} .. 11. 5. 17,3				

PROBLEM III.

Given the observed Altitudes of two Stars, and either the Time at Greenwich, or the estimated Time at the Ship together with the Longitude, to find the Latitude and true Time at the Ship.

Call either Star, whose distance from the meridian is less than 5 hours, or greater than 7 hours,* *A*, and the other *B*.

From the observed, deduce the true, altitudes of *A* and *B*, and from thence their true zenith distances. Take the right ascension and North Polar distance of *A* from Table M, the distance between *A* and *B*, and the arc *D*, from Table N, and find the supplement of the right ascension of the Sun.

Proceed as in Problem I., omitting what relates to finding the arc *D*, which is already taken from Table N.

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* One of the Stars will always be either in the former or latter situation.

EXAMPLE I.

April 25, 1825, at 11^h. 7^m at Greenwich, in North Latitude, the altitude of α Ursæ Maj observed to be 73°. 45′. 15″, and of α Lyræ 27°. 10′. 0″; the observer's eye was 21 feet a surface of the sea, and the objects on different sides of the Meridian, the former at a less from it than 5^h to the West, and lying on the North side of the vertical passing through t required the Latitude and Time at the Ship.

	° ′ ″	° ′ ″			
Tr.Z.D.A (α Urs.)	16. 10. 30	Z. dist. A...	16. 10. 30	..... L. ½ El.	1. 47959 21 L. Mid. .. 8
Tr.Z.dist.B.	62. 46. 19	Dist. A & B.	66. 3. 26	..... ———	0. 96379 3
Dist. A & B.	66. 3. 26	Diff.	49. 52. 56	Suv.	1644347 15
Arc D.	51. 2. 22				
N.P.dist.A.	27. 18. 28	Z. dist. B...	62. 46. 19	Ver.	542385 82
	h m s				
R. Asc. A.	10. 52. 52, 3			N°..	186829 Log... 5. 271377 68
Sup. R.A. ⊙	21. 47. 34, 2				
		Arc C.....	74. 33. 41	..... L. Ris.	7. 71506.
		Arc D.	51. 2. 22		
		E (C+D)	125. 36. 3	....	L. Ris. ...8
		N. P. D. A.	27. 18. 28	....	L. Mid. ..8
				N°..	202148 ..... Log.....5
		Diff. Z. and N. P. D. A.	11. 7. 58	Ver..	18762 56
		Lat. req^d..	51. 10. 20	Cov.	220966 ..... R.L. Sec. 1
		E.....		....	L. Mid. ..8
			h m s		
		Dist. Mer. A.	1. 24. 42, 8	....	———...8
		R. Asc. A...	10. 52. 52, 3		
		Sup. R.A. ⊙	21. 47. 34, 2		
		Time req^d..	10. 5. 9, 3		

EXAMPLE II.

March 30, 1825, at $14^h.6^m.45^s$ at Greenwich, in South Latitude, the altitude of Antares was observed to be $69°.38'.55''$, and of Atair $20°.38'.50''$; the observer's eye was 21 feet above the surface of the sea, and both objects to the East of the Meridian, the former at a less distance from it than 5^h, being nearer to it than the latter, and lying on the South side of the vertical passing through the latter: required the Latitude and Time at the Ship.

Tr.Z.D.*A.* (Ant.) 20. 16. 55	Z. dist. *A*... 20. 16. 55	.....	L. ½ El. 1.38484 2	L. Mid. .. 8.61482 2
Tr.Z.dist. *B*. 69. 19. 9	Dist. *A* & *B*. 60. 13. 51	.....	—— 0.98620 1	
Dist. *A* & *B*. 60. 13. 51	Diff. 39. 56. 55	Suv. 1766606 15		
Arc *D*..... 62. 9. 45				
N.P.D. *A*. 116. 2. 3	Z. dist. *B*... 69. 19. 9	Ver. 646797 41		
h m s				
R. Asc. *A*.. 16. 18. 42,4		N°.. 413459	Log... 5.616370 62	
Sup. R. As. ⊙ 23. 22. 56,0				
	Arc *C*.....111. 58. 0	.....	L. Ris. 7.38750.	
	Arc *D*..... 62. 9. 45			
	E (*C*−*D*).. 49. 48. 15	.....	.....	L. Ris... 7.39915 7
	N.P. dist. *A*. 116. 2. 3	.....	.....	L. Mid... 9.02873 6
		N°.. 110397	.....	Log..... 5.04285
	Diff. Z. & N.P.D. *A*. 95. 45. 8	Ver. 1100188 43		
	Lat. required 12. 9. 33	Suc. 1210628	.....	R. L. Sec. 0.90456 1
	E.....	.....	.....	L. Mid... 8.95823 4
	Dist.mer. *A* West. h m s 22. 57. 11,0	h m s Sup. 1. 2. 49,0	.....	——... 8.50770
	R. Asc. *A*. .. 16. 18. 42,4			
	Sup. R. A. ⊙ 23. 22. 56,0			
	Time req^d... 4. 38. 49,4			

EXAMPLE III.

January 1, 1825, at $7^h.38^m$ estimated Time at the Ship, in Longitude 81°. 5′ W. and South La the altitude of β Centauri was observed to be 22°. 0′. 0″, and of Fomalhaut 45°. 25′. 37 observer's eye was 22 feet above the surface of the Sea, and the objects on different sides Meridian, the latter at a less distance from it than 5^h towards the West, and lying on the side of the vertical passing through the former, which it preceded more than 12^h: requir Latitude and Time at the Ship.

° ′ ″	° ′ ″			
Tr.Z.D. *A.* (Fom.) 44. 39. 56	Z. dist. *A.*... 44. 39. 56	.....	L. ½ El. 1.07780	L. Mid... 8.
Tr.Z. dist. *B.* 68. 6. 58	Dist. *A* & *B.* 82. 17. 46	.....	1 ——— 0.92868	
Dist. *A* & *B.* 82. 17. 46	Diff..... 37. 37. 50	Suv. 1791935		
Arc *D*.....158. 25. 58		30		
N. P. D. *A.* 120. 32. 50	Z. dist. *B*... 68. 6. 58	Ver. 627012		
h m s		262		
R. As. *A*.. 22. 47. 57,7		N°.. 419239	Log... 5.622421	
Sup. R. A. ⊙ 5. 10. 17,5			41	
	Arc *C*..... 66. 32. 6	.....	L. Ris. 7.62895.	
	Arc *D*.....158. 25. 58			
	C+*D*.....224. 58. 4	*E.* 135. 1. 56	.....	L. Ris. .. 8
	N. P. D. *A*..120. 32. 50	.....	.....	L. Mid... 9.
		N°. 1033737	.....	Log..... 6.
	Diff. Z. and N. P. D. *A.* 75. 52. 54	Ver. 755821		
		253		
	Lat. req^d... 52. 10. 4	Suc. 1789811	.....	R. L. Sec. 1.
	E.....	.....	.....	L. Mid... 8.
	h m s			
	Dist. Mer. *A*. 3. 36. 22,3	.....	.....	——.. 8.
	R. As. *A*.... 22. 47. 57,7			
	Sup. R. As. ⊙ 5. 10. 17,5			
	Time req^d... 7. 34. 37,5			

EXAMPLE III.—*continued.*

Centauri had been called *A*, and Fomalhaut *B*, the process would have been as follows:—

° ′ ″		° ′ ″			
′ } 68. 6. 57	Z. dist. *A*...	68. 6. 58	.....	L. ½ El. 0.95722	L. Mid. .. 9.04273 5
B. 44. 39. 56	Dist. *A* & *B*.	82. 17. 46	.....	——— 0.92868	
B. 82. 17. 46	Diff.	14. 10. 48	Suv. 1969516 15		
. 141. 22. 52					
f. 140. 31. 17	Z. dist. *B*...	44. 39. 56	Ver. 288587 190		
h m s					
f.. 13. 51. 24,7			N°.. 258308	Log... 5.412124 13	
⊙ 5. 10. 7,5					
	Arc *C*.....	44. 1. 11	.....	L. Ris. 7.29804	
	Arc *D*.....141. 22. 52				
	C+*D*.....185. 24. 3		*E*. 174. 35. 57	.....	L. Ris... 8.14953 2
	N.P. dist. *A*. 149. 31. 17		.....	.....	L. Mid... 8.78030 15
			N°.. 939247	.....	Log..... 5.97278
	Diff. Z. & N.P.D. *A*.	81. 24. 19	Ver. 850465 91		
	Lat. required	52. 10. 1	Suc. 1789803	.....	R. L. Sec. 1.13702
	E.....		.....	.....	L. Mid... 8.04889 4
		h m s	h m s		
	Dist. mer. *A* West.	12. 32. 45,0	Sup. 11. 27. 15,0	.....	———... 8.22873
	R. Asc. *A*. ..	13. 51. 34,7			
	Sup. R. A. ⊙	5. 10. 17,5			
	Time req^{d}...	7. 34. 37,2			

SCHOLIUM.

The principal error to which the results are liable in all these Problems arises from errors in the observed altitudes, and this error in some situations of the objects may become very large, and ought therefore to be carefully guarded against. It depends in a great measure upon the angle contained between the verticals passing through the objects, being usually the least when this angle is a right angle, and increasing as it is diminished, and may in general be sufficiently obviated in the third Problem by choosing such stars for observation as have this angle of considerable magnitude, not less than 30°. But it will sometimes happen in this Problem, and more frequently in the first and second, that the situation of the objects cannot be left to the choice of the observer, and the angle between the verticals may be so small as to render the conclusions liable to material errors. Whenever indeed this angle appears to be less than 30°, an error of some consequence may occur in one, if not both of the conclusions, and it will therefore be prudent in such cases to compute the greatest multiple of the error in altitude (supposed to be of the same magnitude at each observation) to which the results can be subject, in order to ascertain the degree of confidence to which they are entitled; and this may be readily done as follows:

Find the distance of *B* from the meridian towards the west, and, if it exceeds 12^h, take its supplement to 24^h for the shortest distance.

Add together the logarithm in the column of L. ½ El. T. corresponding to the zenith distance of *A*,* and the logarithms in the column of L. Mid. T. corresponding to its North Polar distance, and its shortest distance from the meridian (the two first being always, and the third generally, used in the preceding operation), and rejecting 10 from the index of the sum, take the arc corresponding to it in the same column, and call the sum itself *P*, and the arc *P'*.

Add together the logarithm in the column of L. ½ El. T. corresponding to the zenith distance of *B*, and the logarithms in the column of L. Mid. T. corresponding to its North Polar distance, and its shortest distance from the meridian, and rejecting 10 from the index of the sum, take the arc corresponding to it in the same column, and call the sum itself *Q*, and the arc *Q'*.

Add together the logarithm in the column of L. Mid. T. corresponding to the zenith distance of *B* (and which will be the arithmetical complement of the logarithm taken out for this arc before), and the logarithms in the column of L. ½ El. T. corresponding to the distance between *A* and *B* (used in the preceding operation), and the arc *C*, and rejecting 10 from the index of the sum, call it *R*.

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* In taking out the quantities from the Tables, it will be quite sufficient to take out the logarithms for the nearest minutes of the given arc, or for the nearest four seconds of the given time; and the arc or time, or natural number, for the logarithm in the Table nearest to the given logarithm. It will be sufficient likewise to take out the logarithms to four places of decimals.

Add the logarithm R to each of the logarithms P and Q, and the sum* of the natural numbers of the two sums (10 being rejected from the index of each) will be the greatest multiple of the error in altitude to which the computed latitude can be subject.

Add the logarithm R, the R. L. Sec. of the computed Latitude (used in the preceding operation), and the constant logarithm 9.0800 to the R. L. Cos. of each of the arcs P' and Q', and the sum of the natural numbers of the two sums (20 being rejected from the index of each) will be the greatest multiple of the error in altitude to which the computed time can be subject.

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* In estimating the *possible* error in the result, it is supposed that both the errors arising from the errors in the altitudes are either positive or negative, so as to produce an error in the result equal to their sum; but it is just as likely that one of them may be positive, and the other negative, so as to produce an error in the result only equal to their difference. The same may be said with respect to the error in the computed time.

EXAMPLE I.

Required the greatest multiple of the error in altitude to which the results can be subject in

Example I. Problem I.

h m s				
.... 8. 29. 45	Z. dist. *A*.	L. ½ El.	1. 1071	
⊙. 23. 36. 29	N. P. D.	L. Mid.	9. 0748	
A. ☽ 18. 45. 25	Sh^{s} dist. mer.	———	8. 1873	
	P'..... 11°. 21′	——— *P*.....	8. 3692	R. L. Co.....s. 9 0667 (*a*)
er. } 18. 51. 30				
M. }	Z. dist. *B*.... 64. 29	L. ½ El.	0. 9692	
t.... 8. 8. 30	N. P. D. 63. 36	L. Mid.	9. 0274	
	h m s			
	Sh^{s} dist. mer. 5. 8. 30	———	9. 0642	
	Q'..... 75°. 18′	——— *Q*.....	9. 0608	——— ..... 8. 4792 (*b*)
	Z. dist. *B*.	L. Mid.	9. 0308	
	Dist. *A* & *B*.....	L. ½ El.	0. 9257	
	Arc *C*. 54. 23	———	1. 0146	
		——— *R*.....	0. 9711	*R*. 0. 9711
	Lat.....	.....		R. L. Sec.... ....1. 0277 (*c*)
				Const. Log..... 9. 0800
		Log. $(P+R)$ — 1. 2993	N° 0, 2	Log. $(a+c)$ 0. 1455
		Log. $(Q+R)$ — 1. 9909	N° 1, 0	Log. $(b+c)$ — 1. 5170
		Greatest mult. in lat. .	1, 2	Greatest mult. in time.

EXAMPLE II.

Required the greatest multiple of the error in altitude to which the results can be subject in

Example II. Problem II.

h m s				
ner. *B* 0. 52. 6	Z. dist. A.	L. ½ El.	0. 9310	
	N. P. D.	L. Mid.	9. 0578	
	h m s			
	Dist. mer.. 5. 33. 42	———	9. 0724	
	P'.....75°. 30′ ...	——— *P*....	9. 0612	R. L. Cos. 8. 4734
	Z. dist. *B*.. 12. 43 ...	L. ½ El.	1. 5815	
	N. P. D. ...77. 24 ...	L. Mid.	9. 0647	
	h m s			
	Dist. mer.. 0. 52. 6	———	8. 4279	
	Q'.....85°. 49′ ...	——— *Q*....	9. 0741	——— 7. 9365
	Z. dist. *B*.....	L. Mid.	8. 4185	
	Dist. *A* & *B*.	L. ½ El.	0. 9577	
	Arc *C*..... 3. 24 ...	———	2. 1495	
		——— *R*.....	1. 5257	*R*. 1. 5257
	Lat.....	.....		R. L. Sec..... 0. 9359
				Const. Log..... 9. 0800
		Log. 0. 5869	N° 3, 9	Log. 0. 0150
		Log. 0. 5998	N° 4, 0	Log. ..... — 1. 4781
		Greatest mult. in lat..	7, 9	Greatest mult. in time.

EXAMPLE III.

Required the greatest multiple of the error in altitude to which the results can be subject in Example I. Problem III.

N. P. D. *B.*	° ′ 51. 22	Z. dist. *A*.....	L. ½ El. 1.4796	
	h m s	N. P. D.	L. Mid. 8.7367	
Dist. mer...	6. 13. 27	Dist. mer.	—— 8.6331	
		P'..... 36. 28 ...	——*P*. 8.8494	R. L. Cos. . 8.9805
		Z. dist. *B*. 62. 46 ...	L. ½ El. 0.9757	
		N. P. D. . 51. 22 ...	L. Mid. 8.9680	
			h m s	
		Dist. mer. 6. 13. 27	—— 9.0745	
		Q'..... 61. 16 ...	——*Q*. 9.0182	——.. 8.7569
		Z. dist. *B*.	L. Mid. 9.0240	
		Dist. *A* & *B*.	L. ½ El. 0.9638	
		Arc *C*. ...74. 34 ...	—— 0.9407	
			R..... 0.9288	*R*..... 0.9288
		Lat.	.....	R. L. Sec... 1.1274
				Const. Log. 9.0800
			Log. −1.7780 N° 0,6	Log.. 0.1167 N° 1,
			—— −1.9470 N° 0,8	Log. −1.8931 N° 0,
			Gr^t^ mult. in lat. 1,4	Gr^t^ mult. in time... 2,

N. B. The angle between the verticals in the first Example is 63°. 58′, in the second 14°. 30′, and in the third 82°. 10′.

TABLES M & N.

The positions of the five Stars *Achernar*, *Canopus*, *β Argûs*, *α Crucis*, a *β Centauri*, in Table M, from which Table N was computed, were taken fro Mr. Fallows's Catalogue of southern Stars, published in the Philosophical Tran actions for 1824; and their annual variations in Right Ascension and North Pol listance were deduced by comparing these positions with those determined l f. de la Caille.

TABLE M.

Right Ascensions, and North Polar Distances of the Stars used in the Problems their annual and monthly Variations, adapted to the Beginning of the Year 18

Names of the Stars.	Right Ascen.	Variation.		N. P. Distance.	Variati
		Ann.	Mon.		Ann.
	h m s	s	s	° ′ ″	″
γ Pegasi	0. 4.14,3	+3,08	0,26	75.47.22	−19,9
Achernar	1.31.10,8	+2,24	0,19	148. 7.45	−18,4
α Arietis	1.57.19,8	+3,36	0,28	67.22. 9	−17,2
Aldebaran	4.25.53,4	+3,43	0,29	73.51. 1	− 7,8
Capella	5. 3.46,6	+4,41	0,37	44.11.28	− 4,4
Rigel	5. 6. 8,0	+2,88	0,24	98.24.38	− 4,5
α Orionis	5.45.42,1	+3,25	0,27	82.38. 1	− 1,1
Canopus	5.20. 3,9	+1,32	0,11	142.36.19	+ 1,8
Sirius	6.37.26,1	+2,64	0,22	106.28.57	+ 4,7
Procyon	7.30. 8,5	+3,17	0,26	84.20. 1	+ 8,9
Pollux	7.34.35,8	+3,69	0,31	61.33.33	+ 8,1
β Argûs	9.11.15,2	+0,72	0,06	159. 0. 2	+14,9
Regulus	9.59. 2,7	+3,21	0,27	77.10.50	+17,3
α Ursæ Majoris	10.52.51,1	+3,83	0,32	27.18.22	+19,2
α Crucis	12.16.54,8	+3,18	0,26	152. 7.48	+20,0
Spica Virginis	13.15.59,2	+3,15	0,26	100.14.39	+18,9
β Centauri	13.51.34,7	+4,15	0,35	149.31.17	+17,7
Arcturus	14. 7.41,0	+2,73	0,23	69.54. 7	+19,0
Antares	16.18.41,5	+3,66	0,30	116. 2. 1	+ 8,7
α Lyræ	18.31. 1,0	+2,03	0,17	51.22.25	− 2,9
Atair	19.42.14,7	+2,93	0,24	81.35.11	− 8,9
Fomalhaut	22.47.57,7	+3,34	0,28	120.32.50	−18,9
α Pegasi	22.56. 3,1	+2,98	0,25	75.44. 3	−19,0

TABLE N.

Distances between the Stars, and Arcs D., with their annual and monthly Varia adapted to the Beginning of the Year 1825.

Names of the Stars.		Distance between Stars.	Variation.		Arc D, when A is Star West.	Variation.		Arc D, when A is Star East.	Vari
Stars West.	Stars East.		Ann.	Mon.		Ann.	Mon.		Ann.
		° ′ ″	″	″	° ′ ″	″	″	° ′ ″	″
γ Pegasi	Aldebaran	62.53.23	0,0	0,0	78.53.22	+ 0,5	0,0	82. 1. 3	−19,
	Capella	69.22.37	+0,1	0,0	45.58.24	+ 0,7	0,1	90.37. 2	−28,
	Rigel	78.11.33	−0,4	0,0	78. 2.55	− 3,2	0,3	73.28.31	−19,
	α Orionis	83.44. 2	+0,1	0,0	83.57.31	0,0	0,0	76.25. 8	−20,
	Sirius	101.45.40	−0,4	0,0	104.15.16	+ 1,7	0,1	78.28.10	−20,
	Procyon	109.12.17	−0,1	0,0	78.41.37	+ 1,3	0,1	72.47.43	−18,
	Pollux	102. 9.11	−0,6	0,0	56. 8.45	0,0	0,0	66.16.59	−30,
Achernar	Rigel	64.19.54	+0,1	0,0	62.14.58	+14,7	1,2	151.48.46	−19,
	α Orionis	82.53.40	0,0	0,0	63.33.50	+14,8	1,2	28.28.19	−20,
	Canopus	39.24.41	−0,1	0,0	114.22.25	+14,7	1,2	127.37.59	−33,
	Sirius	68.59. 9	−1,1	0,1	87.34.51	+14,6	1,2	146.37.24	−20,
	β Argûs	44.32. 8	−0,1	0,0	152.25. 6	+14,7	1,2	136.57. 2	−37,
Aldebaran	Sirius	46. 0.31	+0,3	0,0	133.38.22	+21,0	1,7	46.27.46	−22,
	Procyon	46.18.53	−0,1	0,0	27.43.33	+20,4	1,7	73. 2.12	−19,
	Pollux	45. 2.33	−0,6	0,0	65.41.57	+18,9	1,7	95.22.54	−20,
	Regulus	80. 8.39	−0,3	0,0	79.23.19	+19,1	1,6	75.31.21	−10,
	α Ursæ Maj.	78.43.48	+0,1	0,0	27.40.48	+19,2	1,6	76.34.12	−12,
	Spica Virg.	133.29.58	−0,1	0,0	88.52.48	+19,2	1,6	77.23.55	+ 5,
Capella	Procyon	51. 7. 2	+0,3	0,0	130.21.24	+28,4	2,4	32.15.41	−18,
	Pollux	34.16. 6	−0,6	0,0	107.14.11	+28,4	2,4	49.12.40	−20,
	Regulus	69.36.12	−0,3	0,0	92.27.26	+27,9	2,3	45.34.44	−10,
	α Ursæ Maj.	49.16.50	+0,3	0,0	37.11.56	+27,9	2,3	66.43.50	−12,
	Spica Virg.	120. 6.29	0,0	0,0	72.26.56	+28,3	2,4	42.28.59	+ 7,
Rigel	Procyon	38.33.41	−0,6	0,0	69.46.56	+21,0	1,7	111. 6.58	−19,
	Pollux	51.23.35	−0,4	0,0	42.45.57	+19,2	1,6	130.11.28	−20,
	β Argûs	72. 7.39	0,0	0,0	19.16.53	−19,8	1,6	65.43. 8	−37,
	Regulus	75.45.56	−0,2	0,0	74.24. 3	+19,6	1,6	102.16. 5	−10,
	α Crucis	90.38.43	−0,5	0,0	153.33. 9	+19,5	1,6	70.28.33	− 0
	Spica Virg.	119.46. 9	0,0	0,0	106.57.32	+19,6	1,6	105.56.18	+

TABLE N.

lances between the Stars, and Arcs D., with their annual and monthly Variations, adapted to the Beginning of the Year 1825.

Names of the Stars.		Distance between Stars.	Variation.		Arc D, when A is Star West.	Variation.		Arc D, when A is Star East.	Variation.	
s West.	Stars East.		Ann.	Mon.		Ann.	Mon.		Ann.	Mon.
		° ′ ″	″	″	° ′ ″	″	″	° ′ ″	″	″
rionis	β Argûs....	84. 8.26	−0,2	0,0	163.39. 4	+20,2	1,7	51.10.12	−37,9	3,2
	Regulus..	62.27.25	−0,4	0,0	79.20.41	+20,2	1,7	88.18. 9	−10,4	0,9
	α Ursæ Maj.	77.24.49	−0,1	0,0	27.13.56	+20,3	1,7	98.24. 7	−12,9	1,1
	Spica Virg.	113.24.55	0,0	0,0	98. 0.54	+20,1	1,7	86.20.48	+ 6,6	0,5
	Arcturus..	119.47. 0	−0,5	0,0	61.45.27	+22,6	1,9	68.29.13	+12,6	1,0
nopus	β Argûs ...	25.39.29	−0,1	0,0	145.47. 8	+32,8	2,7	72.20.42	−37,0	3,1
	Regulus..	80.28.19	+0,1	0,0	53.50.25	+32,7	2,7	149.48.40	−10,4	0,9
	α Crucis ...	45. 4.19	−0,6	0,0	138.41. 3	+32,3	2,7	120.56.26	+ 2,3	0,2
	Spica Virg.	90.10.37	0,0	0,0	107.16.14	+32,9	2,7	143.53.29	+ 6,7	0,6
	β Centauri..	55.36. 8	+0,1	0,0	145.30.14	+33,0	2,7	137.18.16	+18,7	1,6
rius....	β Argûs....	57.43.31	−0,8	0,1	164.43. 1	+20,5	1,7	44.51.17	−36,2	3,0
	Regulus..	57.47.28	+1,0	0,1	62.37.18	+32,0	2,7	119. 9.34	− 9,1	0,8
	α Ursæ Maj.	93.20.25	+1,1	0,1	24.21.44	+20,9	1,7	120.25.46	−12,8	1,1
	α Crucis ...	73. 5.18	−1,2	0,1	150.52.48	+20,5	1,7	93.24.16	+ 3,6	0,3
	Spica Virg.	96.10.23	+0,3	0,0	102.37.25	+20,9	1,7	108. 1.54	+ 7,9	0,7
	β Centauri..	84.50.32	−0,6	0,0	151. 7.40	+20,7	1,7	114. 5.48	+19,8	1,6
	Arcturus..	116.17.46	−0,5	0,0	75 18.53	+23,4	1,9	98.59. 7	+13,9	1,2
ocyon..	Regulus..	37.23.23	+0,4	0,0	76.16. 8	+17,2	1,4	97.31.44	− 9,5	0,8
	α Ursæ Maj.	67.51. 4	+0,11	0,1	22.31.45	+18,7	1,6	123.47. 1	−12,7	1,1
	Spica Virg.	87.32.31	+0,3	0,0	79.26.50	−18,5	1,5	83.47.22	+ 7,5	0,6
	Arcturus..	96.48.14	−0,2	0,0	68.55.28	+20,7	1,7	81.23.59	+12,6	1,0
llux ...	Regulus..	37. 1.46	+0,3	0,0	107.23.47	+21,0	1,7	59.22.37	−10,1	0,8
	α Ursæ Maj.	46.46.46	+0,2	0,0	28.37.47	+21,2	1,8	113.18.17	−13,7	1,1
	Spica Virg.	90.49.50	+0,8	0,1	101.12.40	+20,3	1,7	61.13.24	+ 6,8	0,6
	Arcturus..	87.25.45	+0,5	0,0	68.28.38	+23,0	1.8	60.34.46	+11,4	0,9
gûs....	α Crucis ...	19.48.55	−0,4	0,0	92.41.26	+41,7	3,4	49.58.24	− 0,3	0,0
	Spica Virg.	70.21.58	0,0	0,0	113.44. 3	−37,8	3,1	160.31.37	+ 6,6	0,6
	β Centauri..	29.56.42	+0,1	0,0	107.11.16	+38,2	3,2	137.32.55	+18,7	1,6
	Antares ..	71.33.26	0,0	0,0	114.58.39	+37,7	3,1	158.48.22	+20,3	1,7
gulus..	α Crucis ...	79.39. 1	−0,1	0,0	15.36. 2	−10,7	0,9	34. 7.18	+ 0,2	0,0
	Spica Virg.	54. 3. 3	+0,1	0,0	112.58.29	+ 8,1	0,7	65.49.17	+ 6,7	0,6
	β Centauri..	85.59.33	+0,3	0,0	25.35. 0	−10,2	0,8	56. 6.46	+19,0	1,6
	Arcturus..	59.44.33	−0,9	0,1	74. 1.24	+12,7	1,1	86.33.21	+10,3	0,9
	Antares ..	99.55.37	+0,1	0,0	114.39.13	+10,4	0,9	80.29.29	+20,2	1,7
	α Lyræ	109.17.36	0,0	0,0	40.42.58	+ 9,9	0,8	54.30.18	+24,9	2,1
ssæ Maj.	Spica Virg.	77.59. 2	−0,2	0,0	143.57.50	+12,8	1,1	15.55. 2	+ 6,6	0,5
	Arcturus..	53.52. 9	+1,2	0,1	119. 7. 4	+15,3	1,3	25.15.42	+10,4	0,9
	α Lyræ	66. 3.26	−0,2	0,0	51. 2.18	+12,4	1,0	27.10. 3	+25,5	2,1
	Atair	100. 7. 7	−0,2	0,0	47.57.31	+12,1	1,0	20. 8.42	+18,2	1,5
ucis ...	Antares ..	53.28.28	+0,5	0,0	76.34.13	− 0,2	0,0	149.36. 7	+19,5	1,6
ica Virg.	Antares ..	45.54.13	0,0	0,0	116.28.56	− 6,5	0,5	78.35.53	+19,9	1,7
	α Lyræ	87.46.20	+0,2	0,0	50. 4. 9	− 6,8	0,6	74.59.44	−25,3	2,1
	Atair	97.53.30	+0,8	0,1	87.48.57	− 6,9	0,6	99.15.53	+18,1	1,5
ntauri..	Fomalhaut	82.17.46	−0,3	0,0	141.22.52	−18,9	1,7	158.25.58	+ 7,0	0,6
cturus..	Antares ..	56. 1.24	−0,9	0,1	35.53.15	+13,1	1,1	37.46.56	+22,7	1,9
	Lyræ	59. 0.43	+2,3	0,2	56.14.46	−12,6	1,0	88. 5.52	+26,6	2,2
	Atair	81.11.20	+1,7	0,1	84.12.22	−12,6	1,0	70.49. 1	+20,2	1,7
ntares ..	α Lyræ	71.41.14	+0,6	0,0	26.41.25	−20,1	1,7	148.53.41	+25,2	2,1
	Atair	60.13.51	−0,2	0,0	62. 9.40	+20,4	1,7	126.33.52	+17,3	1,4
	Fomalhaut	82.50.52	+0,5	0,0	59.25. 2	+19,8	1,6	63.55.24	− 7,4	0,6
yræ	Fomalhaut	91.25.21	+0,3	0,0	129. 7. 8	+25,4	2,1	44.43.55	+ 7,0	0,6
	γ Pegasi ...	76. 1.23	−0,3	0,0	82.49.24	−25,0	2,1	53. 5.24	− 0,6	0,0
tair	Fomalhaut	59. 8.49	+0,3	0,0	133.22.47	−17,9	1,5	56.36. 8	+ 6,6	0,5
	γ Pegasi ...	64.18. 7	−0,7	0,1	78.13. 0	−18,1	1,5	87.23.11	− 0,7	0,1
omalhaut	α Orionis...	106. 8.44	−0,5	0,0	90.54.31	− 7,6	0,6	119.44.30	−19,8	1,6
	Achernar..	39. 7.13	−0,4	0,0	33. 9. 8	+ 7,1	0,6	63. 7.18	−15,0	1,2
	Canopus..	78.30.33	−0,4	0,0	145.13.32	+28,6	2,4	126. 1.14	−33,	

Days of the Week.	Days of the Month.	*Sundays, and other remarkable Days.*
Th.	1	*Circumcision.*
F.	2	
Sa.	3	
Sun.	4	2*d Sun. after Christmas.*
M.	5	
Tu.	6	*Epiphany.*
W.	7	
Th.	8	Lucian.
F.	9	
Sa.	10	
Sun.	11	1*st Sun. after Epiphany.*
M.	12	
Tu.	13	Hilary. Camb. Term beg.
W.	14	Oxford Term begins.
Th.	15	
F.	16	
Sa.	17	
Sun.	18	2*d Sun. aft. Epiph.* Prisca.
M.	19	
Tu.	20	Fabian. In 8 d. of St. Hil.
W.	21	Agnes. [1 ret.
Th.	22	Vincent.
F.	23	Hilary Term begins.
Sa.	24	
Sun.	25	3*d Sun. aft. Epiph. Conversion of St. Paul.*
M.	26	
Tu.	27	In 15 d. of St. Hil. 2 ret.
W.	28	[*D. of Sussex b.*
Th.	29	*K. Geo. IV. Access.* 1820.
F.	30	*K. Char. I. Martyr.*
Sa.	31	*K. Geo. IV. procl.* 1820.

Phases of the MOON.

	D.	H.	M.
● New Moon	5.	3.	52
☽ *First Quarter* ...	11.	19.	18
○ Full Moon ...	19.	12.	17
☾ *Last Quarter* ...	27.	17.	21

Other *Phenomena.*

D.	H.	M.	
1.	8.	-	☿ ☌ ♐.
1.	11.	-	☽ 4 ♑ ♒.
1.	12.	-	☽ ☍ ♒.
1.	20.	-	☽ ☉ ♒.
2.	12.	-	☽ ☌ Oph.
6.	6.	-	☽ ☍ ♍.
8.	5.	-	☽ ☉ ♒.
10.	8.	-	♀ ☌ Oph.
11.	11.	-	☽ ☐ ♓.
12.	2.	-	☽ ☍ ♓.
15.	1.	-	☽ 1 ☌ ♉.
15.	2.	-	☽ 2 ☌ ♉.
19.	17.	44	☉ enters ♒.
20.	11.	-	☽ 2 ☌ ♋.
21.	4.	-	☽ ☐ ♎.
21.	9.	-	☽ ☍ ♎.
21.	19.	-	☽ ☿ ♎.
27.	6.	-	☽ ☌ ♏.
27.	18.	-	♀ 1 ☍ ♐.
28.	17.	-	☿ ☍ ♍.
28.	21.	-	☽ ☍ ♒.
29.	5.	-	☽ ☉ ♒.
29.	16.	-	♀ ☍ ♐.
29.	18.	-	☿ ☌ ♍.
29.	22.	-	☽ ☌ Oph.
30.	15.	-	♀ ☿ ♐.

Days of the Week.	Days of the Month.	THE SUN's Longitude.	Rt. Ascen. *in Time.*	Declin. *South.*	Diff.	Equation of Time. *Add to app. Time.*	Diff.
		S. D. M. S.	H. M. S.	D. M. S.	M. S	M. S.	S.
Th.	1	9. 10. 54. 9	18. 47. 26, 0	23. 0. 40		3. 57, 1	
					5. 14		28, 3
F.	2	9. 11. 55. 22	18. 51. 50, 9	22. 55. 26		4. 25, 4	
					5. 42		28, 0
Sa.	3	9. 12. 56. 35	18. 56. 15, 5	22. 49. 44		4. 53, 4	
					6. 9		27, 5
Sun.	4	9. 13. 57. 47	19. 0. 39, 7	22. 43. 35		5. 20, 9	
					6. 36		27, 2
M.	5	9. 14. 59. 0	19. 5. 3, 5	22. 36. 59		5. 48, 1	
					7. 2		26, 7
Tu.	6	9. 16. 0. 12	19. 9. 26, 9	22. 29. 57		6. 14, 8	
					7. 30		26, 3
W.	7	9. 17. 1. 24	19. 13. 49, 7	22. 22. 27		6. 41, 1	
					7. 56		25, 7
Th.	8	9. 18. 2. 36	19. 18. 12, 1	22. 14. 31		7. 6, 8	
					8. 22		25, 2
F.	9	9. 19. 3. 47	19. 22. 33, 9	22. 6. 9		7. 32, 0	
					8. 48		24, 6
Sa.	10	9. 20. 4. 58	19. 26. 55, 1	21. 57. 21		7. 56, 6	
					9. 14		24, 0
Sun.	11	9. 21. 6. 8	19. 31. 15, 7	21. 48. 7		8. 20, 6	
					9. 39		23, 3
M.	12	9. 22. 7. 16	19. 35. 35, 7	21. 38. 28		8. 43, 9	
					10. 4		22, 7
Tu.	13	9. 23. 8. 24	19. 39. 55, 1	21. 28. 24		9. 6, 6	
					10. 29		22, 1
W.	14	9. 24. 9. 32	19. 44. 13, 7	21. 17. 55		9. 28, 7	
					10. 53		21, 4
Th.	15	9. 25. 10. 38	19. 48. 31, 7	21. 7. 2		9. 50, 1	
					11. 18		20, 6
F.	16	9. 26. 11. 43	19. 52. 49, 0	20. 55. 44		10. 10, 7	
					11. 42		20, 0
Sa.	17	9. 27. 12. 48	19. 57. 5, 6	20. 44. 2		10. 30, 7	
					12. 4		19, 2
Sun.	18	9. 28. 13. 52	20. 1. 21, 4	20. 31. 58		10. 49, 9	
					12. 29		18, 5
M.	19	9. 29. 14. 55	20. 5. 36, 5	20. 19. 29		11. 8, 4	
					12. 51		17, 7
Tu.	20	10. 0. 15. 57	20. 9. 50, 8	20. 6. 38		11. 26, 1	
					13. 13		17, 0
W.	21	10. 1. 16. 59	20. 14. 4, 4	19. 53. 25		11. 43, 1	
					13. 36		16, 3
Th.	22	10. 2. 17. 59	20. 18. 17, 2	19. 39. 49		11. 59, 4	
					13. 58		15, 4
F.	23	10. 3. 18. 59	20. 22. 29, 3	19. 25. 51		12. 14, 8	
					14. 19		14, 7
Sa.	24	10. 4. 19. 59	20. 26. 40, 6	19. 11. 32		12. 29, 5	
					14. 41		13, 9
Sun.	25	10. 5. 20. 57	20. 30. 51, 1	18. 56. 51		12. 43, 4	
					15. 1		13, 1
M.	26	10. 6. 21. 55	20. 35. 0, 7	18. 41. 50		12. 56, 5	
					15. 21		12, 3
Tu.	27	10. 7. 22. 52	20. 39. 9, 7	18. 26. 29		13. 8, 8	
					15. 42		11, 5
W.	28	10. 8. 23. 49	20. 43. 17, 8	18. 10. 47		13. 20, 3	
					16. 1		10, 7
Th.	29	10. 9. 24. 44	20. 47. 25, 1	17. 54. 46		13. 31, 0	
					16. 21		10, 0
F.	30	10. 10. 25. 39	20. 51. 31, 6	17. 38. 25		13. 41, 0	
					16. 39		9, 1
Sa.	31	10. 11. 26. 34	20. 55. 37, 3	17. 21. 46		13. 50, 1	
					16. 58		8, 3

Days	Time of ⊙'s Semidiam. passing Merid.	THE SUN'S Semi-diameter.	Hourly Motion.	Logar. Distance.	Place of the ☽'s Node.
	M. S.	M. S.	M. S.		S. D. M.
1	1. 10, 8	16. 17, 8	2. 32, 9	9. 992648	6. 12. 20
7	1. 10, 5	16. 17, 7	2. 32, 9	9. 992706	6. 12. 0
13	1. 10, 1	16. 17, 4	2. 32, 8	9. 992823	6. 11. 41
19	1. 9, 5	16. 16, 9	2. 32, 6	9. 993025	6. 11. 22
25	1. 8, 9	16. 16, 2	2. 32, 4	9. 993325	6. 11. 3

ECLIPSES OF THE SATELLITES OF JUPITER.

MEAN TIME.

I. Satellite.		II. Satellite.		III. Satellite.	
Immersions.		*Immersions.*			
Days.	H. M. S.	Days.	H. M. S.	Days.	H. M. S.
2	5. 6. 38	2	15. 39. 8	5	7. 27. 41 Im.
3	23. 34. 59	6	4. 56. 15	5	9. 41. 5 E.
5	18. 3. 24	* 9	18. 13. 44	12	11. 25. 10 Im.
7	12. 31. 44	13	7. 30. 45	12	13. 39. 3 E.
9	7. 0. 8	16	20. 48. 4	19	15. 22. 42 Im.
11	1. 28. 28	20	10. 5. 2	*19	17. 37. 8 E.
12	19. 56. 52	23	23. 22. 12	26	19. 20. 49 Im.
14	14. 25. 12	27	12. 39. 7	26	21. 35. 52 E.
16	8. 53. 36	31	1. 56. 9		
18	3. 21. 56				
19	21. 50. 19				
21	16. 18. 38				
23	10. 47. 2				
25	5. 15. 21				
26	23. 43. 45			IV. Satellite.	
*28	18. 12. 2				
30	12. 40. 27				

Days	THE PLANETS' Heliocentric Long.	Heliocentric Lat.	Geocentric Long.	Geocentric Lat.	Declin.	Rt. Asc. *in Time.*	Passage Merid.
	S. D. M.	D. M.	S. D. M.	D. M.	D. M.	H. M.	H. M.
	☿		*MERCURY.*			Sup. ☌ 13d. 17¼h.	
1	8. 17. 17	3. 37 S	9. 3. 22	1. 11 S	24. 36 S	18. 15	23. 30
4	8. 25. 34	4. 27	9. 8. 6	1. 26	24. 39	18. 36	23. 38
7	9. 3. 59	5. 11	9. 12. 53	1. 40	24. 29	18. 57	23. 46
10	9. 12. 38	5. 50	9. 17. 45	1. 51	24. 7	19. 18	23. 54
13	9. 21. 38	6. 22	9. 22. 40	1. 59	23. 30	19. 39	0. 2
16	10. 1. 5	6. 45	9. 27. 40	2. 4	22. 40	20. 1	0. 8
19	10. 11. 6	6. 58	10. 2. 45	2. 5	21. 35	20. 22	0. 17
22	10. 21. 51	6. 58	10. 7. 55	2. 3	20. 17	20. 44	0. 25
25	11. 3. 29	6. 41	10. 13. 8	1. 56	18. 44	21. 5	0. 34
28	11. 16. 10	6. 5	10. 18. 24	1. 44	16. 58	21. 26	0. 42
31	0. 0. 3	5. 4	10. 23. 38	1. 26	15. 0	21. 46	0. 50
	♀		*VENUS.*				
1	6. 17. 43	2. 52 N	8. 7. 5	1. 36 N	19. 56 S	16. 22	21. 35
7	6. 27. 23	2. 31	8. 14. 29	1. 22	21. 11	16. 53	21. 40
13	7. 7. 0	2. 6	8. 21. 54	1. 7	22. 6	17. 25	21. 45
19	7. 16. 37	1. 37	8. 29. 19	0. 51	22. 37	17. 57	21. 52
25	7. 26. 11	1. 6	9. 6. 45	0. 34	22. 43	18. 29	21. 59
	♂		*MARS.*				
1	1. 3. 0	0. 29 S	11. 22. 42	0. 30 S	3. 23 S	23. 34	4. 46
7	1. 6. 28	0. 23	11. 26. 55	0. 23	1. 34 S	23. 49	4. 35
13	1. 9. 54	0. 16	0. 1. 10	0. 16	0. 14 N	0. 5	4. 24
19	1. 13. 19	0. 10	0. 5. 24	0. 9	2. 1	0. 20	4. 14
25	1. 16. 41	0. 3 S	0. 9. 38	0. 3 S	3. 47	0. 35	4. 4
	♃		*JUPITER.*				
1	7. 28. 32	0. 51 N	8. 4. 45	0. 45 N	20. 22 S	16. 12	21. 21
7	7. 29. 0	0. 50	8. 5. 56	0. 45	20. 35	16. 17	21. 0
13	7. 29. 28	0. 50	8. 7. 4	0. 45	20. 46	16. 21	20. 39
19	7. 29. 57	0. 49	8. 8. 9	0. 45	20. 57	16. 26	20. 18
25	8. 0. 25	0. 49	8. 9. 12	0. 45	21. 6	16. 30	19. 57
	♄		*SATURN.*			☍ 20d. 14¾h.	
1	4. 0. 10	0. 21 N	4. 2. 27	0. 23 N	20. 0 N	8. 19	13. 29
7	4. 0. 23	0. 21	4. 2. 0	0. 24	20. 7	8. 17	13. 1
13	4. 0. 37	0. 22	4. 1. 31	0. 25	20. 14	8. 15	12. 33
19	4. 0. 50	0. 22	4. 1. 1	0. 25	20. 21	8. 13	12. 5
25	4. 1. 3	0. 23	4. 0. 32	0. 26	20. 28	8. 11	11. 38
	♅		*GEORGIAN.*			☌ 22d. 1¼h.	
1	10. 2. 7	0. 35 S	10. 1. 8	0. 33 S	20. 28 S	20. 14	1. 26
11	10. 2. 14	0. 35	10. 1. 42	0. 33	20. 20	20. 16	0. 45
21	10. 2. 20	0. 35	10. 2. 17	0. 33	20. 13	20. 19	0. 5

Days of the Week.	Days of the Month.	The MOON's Longitude. Noon.	Longitude. Midnight.	Latitude. Noon.	Latitude. Midnight.
		S. D. M. S.	S. D. M. S.	D. M. S.	D. M. S.
Th.	1	7. 16. 15. 26	7. 22. 55. 8	2. 48. 3 N	3. 16. 1 N
F.	2	7. 29. 42. 5	8. 6. 36. 17	3. 41. 42	4. 4. 34
Sa.	3	8. 13. 37. 38	8. 20. 45. 47	4. 24. 8	4. 39. 54
Sun.	4	8. 28. 0. 12	9. 5. 20. 8	4. 51. 25	4. 58. 17
M.	5	9. 12. 44. 37	9. 20. 12. 35	5. 0. 13	4. 57. 4
Tu.	6	9. 27. 42. 47	10. 5. 13. 58	4. 48. 47	4. 35. 27
W.	7	10. 12. 44. 56	10. 20. 14. 28	4. 17. 20	3. 54. 49
Th.	8	10. 27. 41. 29	11. 5. 5. 5	3. 28. 23	2. 58. 36
F.	9	11. 12. 24. 31	11. 19. 39. 13	2. 26. 5	1. 51. 31
Sa.	10	11. 26. 48. 50	0. 3. 53. 11	1. 15. 32	0. 38. 48 N
Sun.	11	0. 10. 52. 12	0. 17. 45. 58	0. 1. 54 N	0. 34. 34 S
M.	12	0. 24. 34. 39	1. 1. 18. 29	1. 10. 6 S	1. 44. 14
Tu.	13	1. 7. 57. 46	1. 14 32. 49	2. 16. 31	2. 46. 37
W.	14	1. 21. 3. 57	1. 27. 31. 28	3. 14. 13	3. 39. 2
Th.	15	2. 3. 55. 39	2. 10. 16. 48	4. 0. 51	4. 19. 28
F.	16	2. 16. 35. 6	2. 22. 50. 48	4. 34. 45	4. 46. 35
Sa.	17	2. 29. 4. 1	3. 5. 14. 56	4. 54. 55	4. 59. 43
Sun.	18	3. 11. 23. 39	3. 17. 30. 16	5. 1. 0	4. 58. 47
M.	19	3. 23. 34. 51	3. 29. 37. 33	4. 53. 10	4. 44. 16
Tu.	20	4. 5. 38. 26	4. 11. 37. 39	4. 32. 13	4. 17. 11
W.	21	4. 17. 35. 21	4. 23. 31. 43	3. 59. 22	3. 38. 59
Th.	22	4. 29. 27. 0	5. 5. 21. 29	3. 16. 14	2. 51. 23
F.	23	5. 11. 15. 30	5. 17. 9. 26	2. 24. 40	1. 56. 22
Sa.	24	5. 23. 3. 44	5. 28. 58. 51	1. 26. 45	0. 56. 4 S
Sun.	25	6. 4. 55. 19	6. 10. 53. 44	0. 24. 37 S	0. 7. 19 N
M.	26	6. 16. 54. 42	6. 22. 58. 50	0. 39. 24 N	1. 11. 21
Tu.	27	6. 29. 6. 48	7. 5. 19. 17	1. 42. 49	2. 13. 29
W.	28	7. 11. 36. 53	7. 18. 0. 16	2. 42. 56	3. 10. 49
Th.	29	7. 24. 30. 1	8. 1. 6. 34	3. 36. 41	4. 0. 8
F.	30	8. 7. 50. 20	8. 14. 41. 37	4. 20. 41	4. 37. 55
Sa.	31	8. 21. 40. 30	8. 28. 46. 52	4. 51. 19	5. 0. 31

Days of the Month.	Age.	Pass. Merid.	The MOON's Right Ascension. Noon.	Right Ascension. Midnight.	Declination. Noon.	Declination. Midnight.
	D.	H. M.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
1	27	20. 55	224. 36. 56	231. 22. 22	14. 1. 49 S	15. 21. 18 S
2	28	21. 50	238. 19. 40	245. 28. 31	16. 29. 32	17. 24. 42
3	29	22. 48	252. 48. 11	260. 17. 19	18. 5. 3	18. 28. 59
4	30	23. 48	267. 54. 3	275. 36. 7	18. 35. 15	18. 23. 2
5	1	♂	283. 20. 56	291. 5. 54	17. 51. 59	17. 2. 20
6	2	0. 48	298. 48. 29	306. 26. 35	15. 54. 56	14. 31. 9
7	3	1. 46	313. 58. 35	321. 23. 20	12. 52. 49	11. 2. 4
8	4	2. 42	328. 40. 17	335. 49. 22	9. 1. 18	6. 52. 59
9	5	3. 36	342. 50. 58	349. 45. 44	4. 39. 34	2. 23. 26 S
10	6	4. 29	356. 34. 35	3. 18. 32	0. 6. 46 S	2. 8. 22 N
11	7	5. 19	9. 58. 41	16. 36. 4	4. 20. 5 N	6. 26. 40
12	8	6. 10	23. 11. 40	29. 46. 20	8. 26. 37	10. 18. 34
13	9	7. 0	36. 20. 46	42. 55. 27	12. 1. 17	13. 33. 42
14	10	7. 50	49. 30. 41	56. 6. 28	14. 54. 52	16. 3. 59
15	11	8. 40	62. 42. 39	69. 18. 51	17. 0. 25	17. 43. 43
16	12	9. 30	75. 54. 30	82. 28. 53	18. 13. 33	18. 29. 46
17	13	10. 19	89. 1. 10	95. 30. 37	18. 32. 27	18. 21. 49
18	14	11. 8	101. 56. 26	108. 17. 54	17. 58. 16	17. 22. 25
19	15	11. 55	114. 34. 30	120. 45. 53	16. 34. 56	15. 36. 39
20	16	12. 41	126. 51. 50	132. 52. 23	14. 28. 28	13. 11. 22
21	17	13. 25	138. 47. 44	144. 38. 17	11. 46. 19	10. 14. 22
22	18	14. 8	150. 24. 36	156. 7. 23	8. 36. 31	6. 53. 45
23	19	14. 50	161. 47. 29	167. 25. 51	5. 7. 4	3. 17. 24 N
24	20	15. 32	173. 3. 31	178. 41. 35	1. 25. 42 N	0. 27. 5 S
25	21	16. 15	184. 21. 14	190. 3. 43	2. 20. 2 S	4. 12. 12
26	22	16. 59	195. 50. 16	201. 42. 9	6. 2. 37	7. 50. 13
27	23	17. 45	207. 40. 37	213. 46. 54	9. 33. 55	11. 12. 31
28	24	18. 34	220. 2. 5	226. 27. 9	12. 44. 45	14. 9. 12
29	25	19. 26	233. 2. 52	239. 49. 39	15. 24. 24	16. 28. 47
30	26	20. 21	246. 47. 37	253. 56. 28	17. 20. 44	17. 58. 39
31	27	21. 19	261. 15. 26	268. 43. 12	18. 21. 5	18. 26. 43

Days of the Week.	Days of the Month.	The MOON's Semidiameter.		Hor. Parallax.		Proportional Logarithm.	
		Noon.	*Midnight.*	*Noon.*	*Midnight.*		
		M. S.	M. S.	M. S.	M. S.	*Noon.*	*Midn.*
Th.	1	15. 35	15. 43	57. 11	57. 39	4980	4945
F.	2	15. 50	15. 58	58. 7	58. 34	4910	4876
Sa.	3	16. 5	16. 11	59. 0	59. 25	4844	4814
Sun.	4	16. 18	16. 23	59. 48	60. 7	4786	4763
M.	5	16. 27	16. 30	60. 23	60. 35	4744	4729
Tu.	6	16. 33	16. 34	60. 43	60. 47	4720	4715
W.	7	16. 34	16. 32	60. 46	60. 41	4716	4722
Th.	8	16. 30	16. 28	60. 32	60. 20	4733	4747
F.	9	16. 22	16. 18	60. 5	59. 48	4765	4786
Sa.	10	16. 12	16. 7	59. 28	59. 8	4810	4834
Sun.	11	16. 1	15. 55	58. 47	58. 25	4860	4887
M.	12	15. 49	15. 43	58. 3	57. 42	4915	4941
Tu.	13	15. 38	15. 32	57. 22	57. 2	4966	4991
W.	14	15. 27	15. 22	56. 43	56. 25	5016	5039
Th.	15	15. 18	15. 14	56. 8	55. 53	5061	5080
F.	16	15. 10	15. 6	55. 38	55. 23	5099	5119
Sa.	17	15. 2	14. 59	55. 10	54. 58	5136	5152
Sun.	18	14. 56	14. 53	54. 47	54. 37	5166	5179
M.	19	14. 51	14. 48	54. 28	54. 20	5191	5202
Tu.	20	14. 46	14. 45	54. 13	54. 8	5211	5218
W.	21	14. 44	14. 43	54. 3	54. 0	5225	5229
Th.	22	14. 42	14. 42	53. 58	53. 58	5231	5231
F.	23	14. 43	14. 44	54. 0	54. 3	5229	5225
Sa.	24	14. 45	14. 47	54. 8	54. 15	5218	5209
Sun.	25	14. 50	14. 53	54. 25	54. 37	5195	5179
M.	26	14. 57	15. 1	54. 51	55. 7	5161	5140
Tu.	27	15. 6	15. 12	55. 26	55. 47	5115	5088
W.	28	15. 18	15. 25	56. 10	56. 35	5058	5026
Th.	29	15. 32	15. 40	57. 2	57. 30	4991	4956
F.	30	15. 48	15. 56	57. 59	58. 28	4920	4884
Sa.	31	16. 4	16. 12	58. 58	59. 26	4847	4812

DISTANCES of the Moon's *Centre* from the Sun, and from Stars *EAST* of her.

Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
The Sun.	1	54. 41. 38	53. 10. 29	51. 38. 55	50. 6. 56	48. 34. 34	47. 1. 48	45. 28. 38	43. 55. 5
	2	42. 21. 9	40. 46. 50	39. 12. 9	- - -	- - -	- - -	- - -	- - -
α Arietis.	7	- - -	- - -	- - -	- - -	74. 35. 55	72. 46. 37	70. 57. 30	69. 8. 36
	8	67. 19. 56	65. 31. 32	63. 43. 24	61. 55. 35	60. 8. 5	58. 20. 56	56. 34. 9	54. 47. 45
	9	53. 1. 47	51. 16. 15	49. 31. 11	47. 46. 37	46. 2. 36	44. 19. 6	42. 36. 14	40. 54. 1
	10	39. 12. 30	37. 31. 45	35. 51. 47	34. 12. 40	32. 34. 27	- - -	- - -	- - -
Aldebaran.	10	- - -	- - -	- - -	- - -	63. 43. 8	61. 57. 31	60. 12. 13	58. 27. 15
	11	56. 42. 38	54. 58. 20	53. 14. 22	51. 30. 44	49. 47. 26	48. 4. 27	46. 21. 48	44. 39. 28
	12	42. 57. 28	41. 15. 46	39. 34. 23	37. 53. 19	36. 12. 34	34. 32. 7	32. 51. 58	31. 12. 7
	13	29. 32. 34	- - -	- - -	- - -	- - -	- - -	- - -	- - -
Pollux.	13	73. 18. 32	71. 41. 26	70. 4. 37	68. 28. 8	66. 51. 58	65. 16. 6	63. 40. 34	62. 5. 21
	14	60. 30. 28	58. 55. 53	57. 21. 39	55. 47. 44	54. 14. 10	52. 40. 55	51. 8. 2	49. 35. 31
	15	48. 3. 21	46. 31. 32	45. 0. 8	43. 29. 10	41. 58. 36	40. 28. 30	38. 58. 52	37. 29. 45
	16	36. 1. 7	- - -	- - -	- - -	- - -	- - -	- - -	- - -
Regulus.	16	70. 58. 36	69. 24. 56	67. 51. 26	66. 18. 7	64. 44. 59	63. 12. 1	61. 39. 13	60. 6. 35
	17	58. 34. 7	57. 1. 48	55. 29. 39	53. 57 39	52. 25. 49	50. 54. 8	49. 22. 36	47. 51. 13
	18	46. 19. 59	44. 48. 53	43. 17. 57	41. 47. 10	40. 16. 32	38. 46. 3	37. 15. 44	35. 45. 34
	19	34. 15. 33	- - -	- - -	- - -	- - -	- - -	- - -	- - -

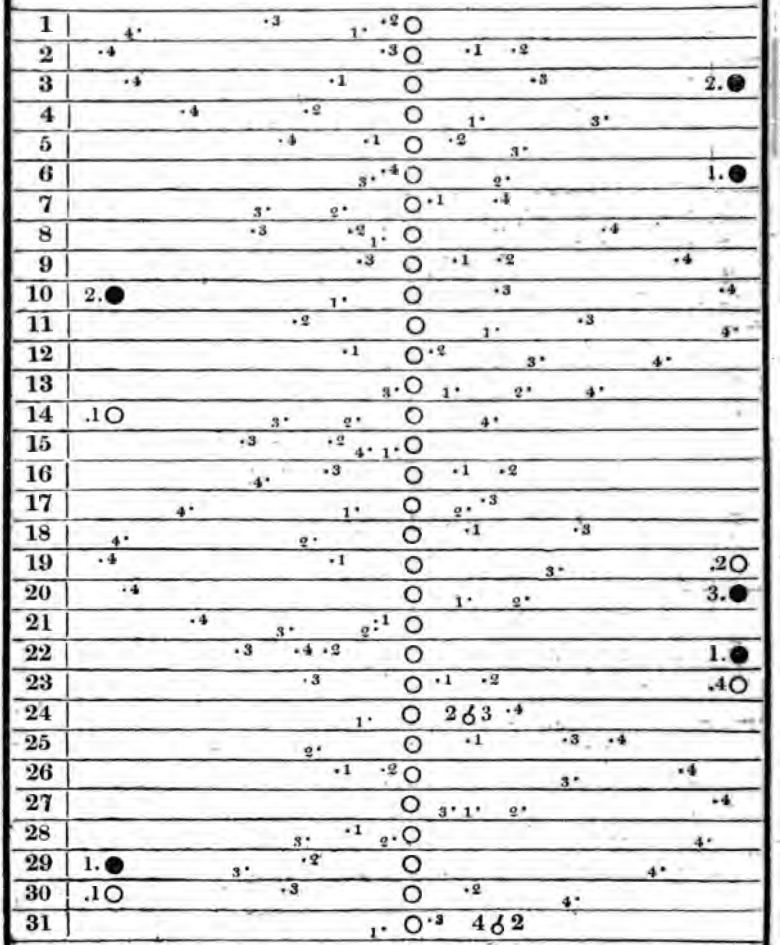
Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
Spica ♍.	19	87. 42. 43	86. 12. 18	84. 41. 59	83. 11. 47	81. 41. 41	80. 11. 41	78. 41. 48	77. 12. 0
	20	75. 42. 18	74. 12. 41	72. 43. 10	71. 13. 44	69. 44. 23	68. 15. 7	66. 45. 55	65. 16. 48
	21	63. 47. 46	62. 18. 48	60. 49. 53	59. 21. 3	57. 52. 16	56. 23. 33	54. 54. 52	53. 26. 15
	22	51. 57. 40	50. 29. 7	49. 0. 37	47. 32. 8	46. 3. 42	44. 35. 17	43. 6. 53	41. 38. 31
	23	40. 10. 9	38. 41. 48	37. 13. 26	35. 45. 6	34. 16. 45	32. 48. 24	31. 20. 2	29. 51. 40
	24	28. 23. 17	- - -	- - -	- - -	- - -	- - -	- - -	- - -
Antares.	24	74. 14. 52	72. 47. 3	71. 19. 9	69. 51. 13	68. 23. 14	66. 55. 11	65. 27. 3	63. 58. 51
	25	62. 30. 34	61. 2. 12	59. 33. 44	58. 5. 10	56. 36. 31	55. 7. 45	53. 38. 53	52. 9. 55
	26	50. 40. 50	49. 11. 38	47. 42. 19	46. 12. 54	44. 43. 23	43. 13. 44	41. 44. 0	40. 14. 11
	27	38. 44. 16	37. 14. 18	35. 44. 15	34. 14. 10	32. 44. 3	- - -	- - -	- - -
The Sun.	25	120. 25. 35	119. 3. 51	117. 41. 57	116. 19. 54	114. 57. 42	113. 35. 20	112. 12. 47	110. 50. 3
	26	109. 27. 8	108. 4. 1	106. 40. 41	105. 17. 9	103. 53. 23	102. 29. 23	101. 5. 7	99. 40. 37
	27	98. 15. 51	96. 50. 48	95. 25. 29	93. 59. 51	92. 33. 57	91. 7. 44	89. 41. 12	88. 14. 20
	28	86. 47. 9	85. 19. 37	83. 51. 43	82. 23. 28	80. 54. 51	79. 25. 51	77. 56. 28	76. 26. 42
	29	74. 56. 33	73. 26. 0	71. 55. 2	70. 23. 39	68. 51. 52	67. 19. 39	65. 47. 1	64. 13. 56
	30	62. 40. 26	61. 6. 29	59. 32. 5	57. 57. 15	56. 21. 59	54. 46. 16	53. 10. 6	51. 33. 31
	31	49. 56. 29	48. 19. 1	46. 41. 7	45. 2. 49	43. 24. 6	41. 44. 59	40. 5. 28	- - -

DISTANCES of the MOON's *Centre* from the SUN, and from STARS *WEST* of her.

Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
Spica ♍.	1	25. 15. 46	26. 54. 32	28. 33. 47	30. 13. 31	31. 53. 44	33. 34. 25	35. 15. 34	36. 57. 11
	2	38. 39. 16	40. 21. 48	42. 4. 46	43. 48. 11	45. 32. 1	- - -	- - -	- - -
The Sun.	8	39. 46. 30	41. 29. 11	43. 11. 43	44. 54. 5	46. 36. 17	48. 18. 18	50. 0. 6	51. 41. 41
	9	53. 23. 3	55. 4. 9	56. 45. 0	58. 25. 34	60. 5. 53	61. 45. 54	63. 25. 38	65. 5. 4
	10	66. 44. 13	68. 23. 3	70. 1. 35	71. 39. 48	73. 17. 42	74. 55. 16	76. 32. 31	78. 9. 27
	11	79. 46. 4	81. 22. 21	82. 58. 19	84. 33. 58	86. 9. 17	87. 44. 16	89. 18. 57	90. 53. 18
	12	92. 27. 21	94. 1. 5	95. 34. 30	97. 7. 37	98. 40. 25	100. 12. 55	101. 45. 7	103. 17. 2
	13	104. 48. 39	106. 19. 59	107. 51. 2	109. 21. 49	110. 52. 19	112. 22. 32	113. 52. 30	115. 22. 12
	14	116. 51. 38	118. 20. 49	119. 49. 45	121. 18. 26	- - -	- - -	- - -	- - -
Fomalhaut.	11	- - -	- - -	- - -	- - -	49. 37. 4	51. 4. 12	52. 31. 43	53. 59. 34
	12	55. 27. 41	56. 56. 5	58. 24. 40	59. 53. 25	61. 22. 20	62. 51. 19	64. 20. 20	65. 49. 24
	13	67. 18. 30	68. 47. 35	70. 16. 37	71. 45. 36	73. 14. 29	- - -	- - -	- - -
α Pegasi.	13	- - -	- - -	- - -	- - -	56. 58. 35	58. 30. 22	60. 2. 7	61. 33. 48
	14	63. 5. 26	64. 37. 0	66. 8. 29	67. 39. 52	69. 11. 10	70. 42. 21	72. 13. 24	73. 44. 21
	15	75. 15. 10	76. 45. 51	78. 16. 24	79. 46. 48	81. 17. 4	- - -	- - -	- - -
α Arietis.	15	- - -	- - -	- - -	- - -	37. 40. 58	39. 10. 11	40. 39. 33	42. 9. 2
	16	43. 38. 37	45. 8. 17	46. 38. 0	48. 7. 45	49. 37. 33	51. 7. 19	52. 37. 4	54. 6. 48
	17	55. 36. 31	57. 6. 11	58. 35. 48	60. 5. 23	61. 34. 54	63. 4. 21	64. 33. 44	66. 3. 3
	18	67. 32. 18	69. 1. 28	70. 30. 33	71. 59. 34	73. 28. 29	- - -	- - -	- - -

Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
Aldebaran.	18	- - -	- - -	- - -	- - -	39. 55. 46	41. 26. 42	42. 57. 31	44. 28. 15
	19	45. 58. 51	47. 29. 21	48. 59. 45	50. 30. 3	52. 0. 14	53. 30. 19	55. 0. 18	56. 30. 12
	20	58. 0. 0	59. 29. 43	60. 59. 21	62. 28. 54	63. 58. 22	65. 27. 45	66. 57. 4	68. 26. 19
	21	69. 55. 29	71. 24. 35	72. 53. 38	74. 22. 37	75. 51. 33	77. 20. 26	78. 49. 16	80. 18. 5
	22	81. 46. 50	- - -	- - -	- - -	- - -	- - -	- - -	- - -
Pollux.	22	39. 46. 59	41. 11. 22	42. 35. 57	44. 0. 43	45. 25. 40	46. 50. 47	48. 16. 4	49. 41. 30
	23	51. 7. 5	52. 32. 47	53. 58. 36	55. 24. 34	56. 50. 39	58. 16. 51	59. 43. 10	61. 9. 36
	24	62. 36. 10	64. 2. 50	65. 29. 38	66. 56. 34	68. 23. 37	69. 50. 48	71. 18. 8	72. 45. 36
	25	74. 13. 12	- - -	- - -	- - -	- - -	- - -	- - -	- - -
Regulus.	25	37. 28. 21	38. 57. 34	40. 26. 56	41. 56. 30	43. 26. 13	44. 56. 7	46. 26. 13	47. 56. 31
	26	49. 27. 1	50. 57. 43	52. 28. 38	53. 59. 47	55. 31. 10	57. 2. 47	58. 34. 40	60. 6. 48
	27	61. 39. 12	63. 11. 53	64. 44. 51	66. 18. 7	67. 51. 41	69. 25. 33	70. 59. 45	72. 34. 16
	28	74. 9. 6	- - -	- - -	- - -	- - -	- - -	- - -	- - -
Spica ♍.	28	20. 42. 13	22. 16. 38	23. 51. 30	25. 26. 51	27. 2. 38	28. 38. 53	30. 15. 34	31. 52. 43
	29	33. 30. 18	35. 8. 19	36. 46. 47	38. 25. 41	40. 5. 3	41. 44. 52	43. 25. 8	45. 5. 51
	30	46. 47. 2	48. 28. 41	50. 10. 47	51. 53. 22	53. 36. 24	55. 19. 54	57. 3. 52	58. 48. 18
	31	60. 33. 11	62. 18. 32	64. 4. 20	65. 50. 35	67. 37. 18	- - -	- - -	- - -

CONFIGURATIONS of the SATELLITES of JUPITER, At ½ an Hour past VI o'Clock in the *Morning*.



Days of the Week.	Days of the Month.	*Sundays, and other remarkable Days.*
Sun.	1	*4th Sun. after Epiphany.*
M.	2	*Purif. of B. V. Mary.*
Tu.	3	Blas. On mor. of Purif.
W.	4	[3 ret.
Th.	5	Agatha.
F.	6	
Sa.	7	
Sun.	8	*5th Sun. after Epiphany.*
M.	9	In 8 days of Purif. 4 ret.
Tu.	10	
W.	11	
Th.	12	Hilary Term ends.
F.	13	
Sa.	14	Valentine.
Sun.	15	*Septuagesima Sunday.*
M.	16	
Tu.	17	
W.	18	
Th.	19	
F.	20	
Sa.	21	
Sun.	22	*Sexagesima Sunday.*
M.	23	
Tu.	24	*St. Matthias. D. of Camb.*
W.	25	Camb. Term div. m. [*b.*
Th.	26	
F.	27	
Sa.	28	

Phases of the MOON.

	D.	H.	M.
● New Moon . . .	3.	14.	31
☽ *First Quarter* . .	10.	7.	23
○ Full Moon	18.	7.	15
☾ *Last Quarter* . .	26.	8.	20

Other *Phenomena.*

D.	H.	M.	
1.	10.	-	♂ ∗ ♓.
2.	17.	-	☽ ☌ ♍.
4.	16.	-	☽ ☊ ♒.
5.	10.	-	♂ ☐ ♓.
7.	19.	-	☽ ☐ ♓.
7.	21.	-	☽ ♂.
8.	8.	-	☽ ☍ ♓.
10.	4.	-	☿ ☌ ♒.
11.	7.	-	☽ 1 ♂ ♉.
11.	7.	-	☽ 2 ♂ ♉.
11.	12.	-	☽ ☌ ♉.
15.	18.	-	♀ ♅.
16.	16.	-	☽ 1 ☌ ♋.
16.	17.	-	☽ 2 ☌ ♋.
17.	10.	-	☽ ☐ ♌.
17.	15.	-	☽ ☍ ♌.
18.	1.	-	☽ ☍ ♌.
18.	8.	24	☉ enters ♓.
19.	-.	-	☿ Stationary.
19.	23.	-	☽ ☍ ♌.
21.	23.	-	♀ ☊ ♍.
22.	5.	-	☽ ☊ ♏.
23.	13.	-	☽ ☍ ♏.
25.	4.	-	☽ ☐ ♎.
25.	13.	-	☽ ☊ ♎.
26.	5.	-	☽ ☍ Oph.

Days of the Week.	Days of the Month.	THE SUN's Longitude.	Rt. Ascen. *in Time.*	Declin. *South.*	Diff.	Equation of Time. *Add to app. Time.*	Diff.
		S. D. M. S.	H. M. S.	D. M. S.	M. S.	M. S.	S.
Sun.	1	10. 12. 27. 27	20. 59. 42, 2	17. 4. 48	17. 16	13. 58, 4	7, 5
M.	2	10. 13. 28. 19	21. 3. 46, 2	16. 47. 32	17. 33	14. 5, 9	6, 7
Tu.	3	10. 14. 29. 11	21. 7. 49, 5	16. 29. 59	17. 51	14. 12, 6	5, 9
W.	4	10. 15. 30. 1	21. 11. 52, 0	16. 12. 8	18. 7	14. 18, 5	5, 0
Th.	5	10. 16. 30. 50	21. 15. 53, 6	15. 54. 1	18. 24	14. 23, 5	4, 3
F.	6	10. 17. 31. 37	21. 19. 54, 4	15. 35. 37	18. 40	14. 27, 8	3, 4
Sa.	7	10. 18. 32. 23	21. 23. 54, 4	15. 16. 57	18. 55	14. 31, 2	2, 6
Sun.	8	10. 19. 33. 7	21. 27. 53, 5	14. 58. 2	19. 9	14. 33, 8	1, 7
M.	9	10. 20. 33. 49	21. 31. 51, 8	14. 38. 53	19. 25	14. 35, 5	1, 0
Tu.	10	10. 21. 34. 30	21. 35. 49, 3	14. 19. 28	19. 38	14. 36, 5	0, 1
W.	11	10. 22. 35. 9	21. 39. 46, 0	13. 59. 50	19. 53	14. 36, 6	0, 6
Th.	12	10. 23. 35. 46	21. 43. 41, 9	13. 39. 57	20. 5	14. 36, 0	1, 5
F.	13	10. 24. 36. 21	21. 47. 37, 1	13. 19. 52	20. 19	14. 34, 5	2, 1
Sa.	14	10. 25. 36. 54	21. 51. 31, 4	12. 59. 33	20. 31	14. 32, 4	3, 0
Sun.	15	10. 26. 37. 26	21. 55. 25, 0	12. 39. 2	20. 43	14. 29, 4	3, 7
M.	16	10. 27. 37. 56	21. 59. 17, 9	12. 18. 19	20. 54	14. 25, 7	4, 4
Tu.	17	10. 28. 38. 24	22. 3. 10, 0	11. 57. 25	21. 6	14. 21, 3	5, 1
W.	18	10. 29. 38. 50	22. 7. 1, 4	11. 36. 19	21. 17	14. 16, 2	5, 8
Th.	19	11. 0. 39. 15	22. 10. 52, 2	11. 15. 2	21. 28	14. 10, 4	6, 5
F.	20	11. 1. 39. 38	22. 14. 42, 2	10. 53. 34	21. 37	14. 3, 9	7, 1
Sa.	21	11. 2. 40. 0	22. 18. 31, 6	10. 31. 57	21. 47	13. 56, 8	7, 8
Sun.	22	11. 3. 40. 20	22. 22. 20, 4	10. 10. 10	21. 57	13. 49, 0	8, 3
M.	23	11. 4. 40. 38	22. 26. 8, 6	9. 48. 13	22. 5	13. 40, 7	9, 0
Tu.	24	11. 5. 40. 55	22. 29. 56, 1	9. 26. 8	22. 14	13. 31, 7	9, 6
W.	25	11. 6. 41. 11	22. 33. 43, 1	9. 3. 54	22. 23	13. 22, 1	10, 0
Th.	26	11. 7. 41. 25	22. 37. 29, 6	8. 41. 31	22. 30	13. 12, 1	10, 7
F.	27	11. 8. 41. 37	22. 41. 15, 4	8. 19. 1	22. 37	13. 1, 4	11, 2
Sa.	28	11. 9. 41. 48	22. 45. 0, 7	7. 56. 24	22. 44	12. 50, 2	11, 7

Days	Time of ⊙'s Semidiam. passing Merid.	The SUN's Semi-diameter.	Hourly Motion.	Logar. Distance.	Place of the ☽'s Node.
	M. S.	M. S.	M. S.		S. D. M.
1	1. 8, 1	16. 15, 3	2. 32, 1	9. 993778	6. 10. 41
7	1. 7, 4	16. 14, 3	2. 31, 8	9. 994220	6. 10. 22
13	1. 6, 7	16. 13, 1	2. 31, 5	9. 994708	6. 10. 3
19	1. 6, 1	16. 11, 9	2. 31, 1	9. 995264	6. 9. 44
25	1. 5, 5	16. 10, 5	2. 30, 7	9. 995890	6. 9. 25

ECLIPSES of the SATELLITES of JUPITER.

MEAN TIME.

I. Satellite.		II. Satellite.		III. Satellite.	
Immersions.		*Immersions.*			
Days.	H. M. S.	Days.	H. M. S.	Days.	H. M. S.
1	7. 8. 45	3	15. 13. 0	2	23. 18. 24 Im.
3	1. 37. 9	7	4. 29. 56	3	1. 34. 1 E.
4	20. 5. 28	*10	17. 46. 41	10	3. 16. 9 Im.
6	14. 33. 51	14	7. 3. 33	10	5. 32. 22 E.
8	9. 2. 10	17	20. 20. 14	17	7. 13. 25 Im.
10	3. 30. 33	21	9. 37. 0	17	9. 30. 11 E.
11	21. 58. 52	24	22. 53. 38	24	11. 10. 36 Im.
*13	16. 27. 15	28	12. 10. 17	24	13. 27. 56 E.
15	10. 55. 34		*Emersion.*		
17	5. 23. 57	28	14. 35. 43		
18	23. 52. 16				
20	18. 20. 39				
22	12. 48. 57				
24	7. 17. 21				
26	1. 45. 40				
27	20. 14. 3				

IV. Satellite.	

Days	THE PLANETS' Heliocentric Long.	Lat.	Geocentric Long.	Lat.	Declin.	Rt. Asc. *in Time.*	Passage Merid.
	S. D. M.	D.M.	S. D. M.	D.M.	D.M.	H. M.	H. M.
	☿ Gr. Elong. 12d. *MERCURY.*					Inf. ☌ 28d. 3¼h.	
1	0. 4. 59	4. 38 S	10. 25. 22	1. 18 S	14. 18 S	21. 52	0. 53
4	0. 20. 39	3. 2	11. 0. 26	0. 52	12. 8	22. 11	0. 59
7	1. 7. 39	1. 3 S	11. 5. 11	0. 19 S	9. 54	22. 28	1. 5
10	1. 25. 46	1. 9 N	11. 9. 22	0. 21 N	7. 44	22. 43	1. 7
13	2. 14. 34	3. 20	11. 12. 43	1. 6	5. 47	22. 55	1. 7
16	3. 3. 27	5. 9	11. 14. 53	1. 53	4. 13	23. 1	1. 2
19	3. 21. 46	6. 22	11. 15. 38	2. 38	3. 14	23. 3	0. 52
22	4. 8. 58	6. 57	11. 14. 54	3. 15	2. 57	22. 59	0. 37
25	4. 24. 49	6. 55	11. 12. 52	3. 38	3. 23	22. 51	0. 17
28	5. 9. 13	6. 27	11. 9. 58	3. 42	4. 24	22. 40	23. 48
	♀ *VENUS.*						
1	8. 7. 20	0. 28 N	9. 15. 26	0. 14 N	22. 20 S	19. 7	22. 8
7	8. 16. 51	0. 6 S	9. 22. 53	0. 3 S	21. 34	19. 39	22. 16
13	8. 26. 22	0. 40	10. 0. 20	0. 19	20. 25	20. 10	22. 24
19	9. 5. 51	1. 12	10. 7. 46	0. 34	18. 54	20. 41	22. 32
25	9. 15. 21	1. 43	10. 15. 13	0. 49	17. 4	21. 12	22. 39
	♂ *MARS.*						
1	1. 20. 35	0. 5 N	0. 14. 33	0. 4 N	5. 48 N	0. 53	3. 54
7	1. 23. 52	0. 11	0. 18. 46	0. 9	7. 30	1. 9	3. 45
13	1. 27. 8	0. 17	0. 22. 57	0. 15	9. 9	1. 25	3. 37
19	2. 0. 22	0. 23	0. 27. 8	0. 19	10. 46	1. 40	3. 29
25	2. 3. 34	0. 29	1. 1. 18	0. 24	12. 18	1. 56	3. 22
	♃ *JUPITER.*						
1	8. 0. 58	0. 48 N	8. 10. 19	0. 45 N	21. 16 S	16. 35	19. 33
7	8. 1. 26	0. 48	8. 11. 13	0. 45	21. 24	16. 39	19. 12
13	8. 1. 54	0. 47	8. 12. 2	0. 46	21. 30	16. 43	18. 52
19	8. 2. 22	0. 47	8. 12. 47	0. 46	21. 36	16. 46	18. 32
25	8. 2. 50	0. 46	8. 13. 26	0. 46	21. 40	16. 49	18. 12
	♄ *SATURN.*						
1	4. 1. 19	0. 24 N	3. 29. 58	0. 27 N	20. 36 N	8. 9	11. 7
7	4. 1. 32	0. 24	3. 29. 30	0. 27	20. 43	8. 7	10. 41
13	4. 1. 45	0. 25	3. 29. 4	0. 28	20. 49	8. 5	10. 16
19	4. 1. 58	0. 25	3. 28. 40	0. 28	20. 54	8. 4	9. 51
25	4. 2. 12	0. 26	3. 28. 19	0. 29	20. 59	8. 2	9. 27
	♅ *GEORGIAN.*						
1	10. 2. 28	0. 35 S	10. 2. 56	0. 34 S	20. 4 S	20. 21	23. 18
11	10. 2. 34	0. 35	10. 3. 30	0. 34	19. 56	20. 24	22. 41
21	10. 2. 41	0. 35	10. 4. 3	0. 34	19. 48	20. 26	22. 4

Days of the Week.	Days of the Month.	The MOON's Longitude. Noon.	Longitude. Midnight.	Latitude. Noon.	Latitude. Midnight.
		S. D. M. S.	S. D. M. S.	D. M. S.	D. M. S.
Sun.	1	9. 6. 0.26	9.13.20.40	5. 5. 6N	5. 4.47N
M.	2	9.20.46.48	9.28.17.52	4.59.20	4.48.41
Tu.	3	10. 5.52.42	10.13.29.59	4.32.53	4.12. 8
W.	4	10.21. 8.21	10.28.46.23	3.46.48	3.17.24
Th.	5	11. 6.22.43	11.13.56. 8	2.44.33	2. 8.58
F.	6	11.21.25.31	11.28.49.59	1.31.23	0.52.38N
Sa.	7	0. 6. 8.50	0.13.21.35	0.13.26N	0.25.28S
Sun.	8	0.20.27.57	0.27.27.50	1. 3.26 S	1.39.53
M.	9	1. 4.21.14	1.11. 8.20	2.14.19	2.46.19
Tu.	10	1.17.49.26	1.24.24.51	3.15.34	3.41.47
W.	11	2. 0.54.58	2. 7.20.13	4. 4.45	4.24.19
Th.	12	2.13.41. 2	2.19.57.51	4.40.24	4.52.55
F.	13	2.26.11. 6	3. 2.21.11	5. 1.49	5. 7. 9
Sa.	14	3. 8.28.27	3.14.33.17	5. 8.54	5. 7. 9
Sun.	15	3.20.35.59	3.26.36.52	5. 1.58	4.53.28
M.	16	4. 2.36.11	4. 8.34.10	4.41.44	4.26.58
Tu.	17	4.14.31. 4	4.20.27. 5	4. 9.19	3.48.59
W.	18	4.26.22.26	5. 2.17.18	3.26.12	3. 1.12
Th.	19	5. 8.11.56	5.14. 6.32	2.34.13	2. 5.32
F.	20	5.20. 1.23	5.25.56.44	1.35.26	1. 4.13S
Sa.	21	6. 1.52.54	6. 7.50.14	0.32.11S	0. 0.19N
Sun.	22	6.13.49. 4	6.19.49.51	0.32.59N	1. 5.30
M.	23	6.25.52.59	7. 1.58.59	1.37.32	2. 8.43
Tu.	24	7. 8. 8.18	7.14.21.29	2.38.43	3. 7.10
W.	25	7.20.39. 3	7.27. 1.30	3.33.41	3.57.56
Th.	26	8. 3.29.20	8.10. 3. 1	4.19.30	4.38. 2
F.	27	8.16.42.58	8.23.29.28	4.53. 6	5. 4.22
Sa.	28	9. 0.22.44	9. 7.22.53	5.11.30	5.14.10

Days of the Month.	THE MOON's Age.	Pass. Merid.	Right Ascension. Noon.	Right Ascension. Midnight.	Declination. Noon.	Declination. Midnight.
	D.	H. M.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
1	28	22. 19	276. 18. 5	283. 58. 2	18. 14. 34 S	17. 14. 3 S
2	29	23. 19	291. 40. 49	299. 24. 9	16. 55. 7	15. 48. 14
3	1	♂	307. 5. 55	314. 44. 18	14. 24. 25	12. 45. 16
4	2	0. 18	322. 17. 53	329. 45. 42	10. 52. 49	8. 49. 26
5	3	1. 15	337. 7. 14	344. 22. 24	6. 37. 43	4. 20. 25 S
6	4	2. 11	351. 31. 27	358. 34. 51	2. 0. 11 S	0. 20. 25 N
7	5	3. 5	5. 33. 15	12. 27. 24	2. 38. 56 N	4. 53. 12
8	6	3. 58	19. 18. 3	26. 5. 52	7. 1. 20	9. 1. 30
9	7	4. 50	32. 51. 28	39. 35. 20	10. 52. 25	12. 32. 48
10	8	5. 41	46. 17. 47	52. 58. 57	14. 1. 39	15. 18. 14
11	9	6. 32	59. 38. 48	66. 17. 10	16. 21. 56	17. 12. 22
12	10	7. 23	72. 53. 44	79. 28. 4	17. 49. 17	18. 12. 39
13	11	8. 13	85. 59. 43	92. 28. 8	18. 22. 33	18. 19. 12
14	12	9. 2	98. 52. 48	105. 13. 18	18. 3. 0	17. 34. 25
15	13	9. 49	111. 29. 16	117. 40. 27	16. 54. 6	16. 2. 45
16	14	10. 35	123. 46. 47	129. 48. 13	15. 1. 9	13. 50. 10
17	15	11. 20	135. 44. 59	141. 37. 22	12. 30. 42	11. 3. 41
18	16	12. 4	147. 25. 46	153. 10. 48	9. 30. 4	7. 50. 51
19	17	12. 47	158. 53. 4	164. 33. 21	6. 7. 2	4. 19. 36
20	18	13. 29	170. 12. 27	175. 51. 16	2. 29. 32 N	0. 37. 51 N
21	19	14. 12	181. 30. 46	187. 11. 55	1. 14. 28 S	3. 6. 25 S
22	20	14. 56	192. 55. 43	198. 43. 14	4. 56. 57	6. 45. 2
23	21	15. 41	204. 35. 30	210. 33. 31	8. 29. 35	10. 9. 30
24	22	16. 28	216. 38. 14	222. 50. 30	11. 43. 37	13. 10. 44
25	23	17. 18	229. 11. 5	235. 40. 34	14. 29. 36	15. 38. 53
26	24	18. 11	242. 19. 18	249. 7. 22	16. 37. 16	17. 23. 24
27	25	19. 6	256. 4. 34	263. 10. 21	17. 56. 2	18. 13. 56
28	26	20. 3	270. 23. 50	277. 43. 56	18. 16. 2	18. 1. 32

Days of the Week.	Days of the Month.	THE MOON'S Semidiameter.		Hor. Parallax.		Proportional Logarithm.	
		Noon.	*Midnight.*	*Noon.*	*Midnight.*		
		M. S.	M. S.	M. S.	M. S.	*Noon.*	*Midn.*
Sun.	1	16. 19	16. 25	59. 52	60. 17	4781	4751
M.	2	16. 31	16. 36	60. 38	60. 55	4726	4705
Tu.	3	16. 40	16. 42	61. 8	61. 16	4690	4680
W.	4	16. 43	16. 42	61. 19	61. 18	4677	4678
Th.	5	16. 40	16. 37	61. 11	61. 0	4686	4699
F.	6	16. 33	16. 28	60. 44	60. 25	4718	4741
Sa.	7	16. 22	16. 15	60. 2	59. 38	4769	4798
Sun.	8	16. 8	16. 1	59. 12	58. 45	4830	4863
M.	9	15. 53	15. 46	58. 18	57. 51	4896	4930
Tu.	10	15. 39	15. 32	57. 25	57. 0	4962	4994
W.	11	15. 25	15. 19	56. 36	56. 14	5025	5053
Th.	12	15. 14	15. 9	55. 54	55. 35	5079	5103
F.	13	15. 4	15. 0	55. 18	55. 3	5125	5145
Sa.	14	14. 56	14. 53	54. 49	54. 37	5164	5179
Sun.	15	14. 50	14. 48	54. 27	54. 19	5193	5203
M.	16	14. 46	14. 44	54. 11	54. 5	5214	5222
Tu.	17	14. 43	14. 42	54. 0	53. 57	5229	5233
W.	18	14. 42	14. 42	53. 56	53. 55	5234	5235
Th.	19	14. 42	14. 42	53. 55	53. 58	5235	5231
F.	20	14. 43	14. 44	54. 1	54. 6	5227	5221
Sa.	21	14. 46	14. 48	54. 12	54. 20	5213	5202
Sun.	22	14. 51	14. 54	54. 29	54. 41	5190	5174
M.	23	14. 57	15. 1	54. 53	55. 8	5158	5139
Tu.	24	15. 6	15. 11	55. 25	55. 44	5116	5092
W.	25	15. 17	15. 23	56. 4	56. 26	5066	5037
Th.	26	15. 29	15. 36	56. 50	57. 15	5007	4975
F.	27	15. 43	15. 51	57. 42	58. 9	4941	4907
Sa.	28	15. 58	16. 6	58. 37	59. 5	4873	4838

DISTANCES of the Moon's *Centre* from the Sun, and from Stars *EAST* of her.

Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
Aldebaran.	6	76. 11. 53	74. 19. 55	72. 28. 15	70. 36. 55	68. 45. 55	66. 55. 15	65. 4. 57	63. 15. 1
	7	61. 25. 26	59. 36. 15	57. 47. 27	55. 59. 3	54. 11. 3	52. 23. 27	50. 36. 17	48. 49. 31
	8	47. 3. 10	45. 17. 14	43. 31. 43	41. 46. 38	40. 1. 58	38. 17. 44	36. 33. 55	34. 50. 32
	9	33. 7. 35	- - -	- - -	- - -	- - -	- - -	- - -	- - -
Pollux.	9	76. 52. 45	75. 12. 25	73. 32. 31	71. 53. 3	70. 14. 2	68. 35. 27	66. 57. 18	65. 19. 36
	10	63. 42. 20	62. 5. 30	60. 29. 7	58. 53. 11	57. 17. 42	55. 42. 39	54. 8. 4	52. 33. 56
	11	51. 0. 16	49. 27. 2	47. 54. 17	46. 22. 2	44. 50. 16	43. 19. 1	41. 48. 17	40. 18. 5
	12	38. 48. 25	- - -	- - -	- - -	- - -	- - -	- - -	- - -
Regulus.	12	73. 52. 17	72. 18. 13	70. 44. 24	69. 10. 50	67. 37. 31	66. 4. 26	64. 31. 36	62. 58. 58
	13	61. 26. 35	59. 54. 24	58. 22. 25	56. 50. 38	55. 19. 4	53. 47. 41	52. 16. 28	50. 45. 26
	14	49. 14. 35	47. 43. 53	46. 13. 21	44. 42. 59	43. 12. 46	41. 42. 42	40. 12. 47	38. 43. 1
	15	37. 13. 24	35. 43. 56	34. 14. 35	32. 45. 23	31. 16. 20	- - -	- - -	- - -
Spica ♍.	15	- - -	- - -	- - -	- - -	84. 41. 38	83. 12. 6	81. 42. 38	80. 13. 15
	16	78. 43. 57	77. 14. 43	75. 45. 33	74. 16. 27	72. 47. 24	71. 18. 24	69. 49. 28	68. 20. 34
	17	66. 51. 43	65. 22. 54	63. 54. 8	62. 25. 23	60. 56. 41	59. 28. 0	57. 59. 20	56. 30. 42
	18	55. 2. 6	53. 33. 31	52. 4. 56	50. 36. 23	49. 7. 50	47. 39. 17	46. 10. 45	44. 42. 13
	19	43. 13. 42	41. 45. 10	40. 16. 39	38. 48. 7	37. 19. 36	35. 51. 4	34. 22. 33	32. 54. 1
	20	31. 25. 29	- - -	- - -	- - -	- - -	- - -	- - -	- - -

Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
Antares.	20	77. 16. 11	75. 48. 16	74. 20. 19	72. 52. 21	71. 24. 20	69. 56. 17	68. 28. 12	67. 0. 4
	21	65. 31. 54	64. 3. 41	62. 35. 25	61. 7. 6	59. 38. 45	58. 10. 21	56. 41. 54	55. 13. 24
	22	53. 44. 52	52. 16. 16	50. 47. 37	49. 18. 56	47. 50. 12	46. 21. 25	44. 52. 38	43. 23. 48
	23	41. 54. 58	40. 26. 4	38. 57. 13	37. 28. 22	35. 59. 34	34. 30. 50	33. 2. 11	31. 33. 38
	24	30. 5. 13	- - -	- - -	- - -	- - -	- - -	- - -	- - -
α Aquilæ.	24	81. 3. 13	79. 38. 43	78. 14. 4	76. 49. 19	75. 24. 26	73. 59. 27	72. 34. 22	71. 9. 13
	25	69. 43. 58	68. 18. 38	66. 53. 16	65. 27. 52	64. 2. 26	62. 36. 59	61. 11. 35	59. 46. 14
	26	58. 20. 57	56. 55. 47	55. 30. 44	54. 5. 51	52. 41. 9	- - -	- - -	- - -
The Sun.	23	- - -	- - -	- - -	- - -	- - -	- - -	120. 20. 53	118. 55. 54
	24	117. 30. 42	116. 5. 16	114. 39. 36	113. 13. 41	111. 47. 32	110. 21. 7	108. 54. 26	107. 27. 28
	25	106. 0. 14	104. 32. 42	103. 4. 53	101. 36. 45	100. 8. 19	98. 39. 34	97. 10. 30	95. 41. 6
	26	94. 11. 22	92. 41. 17	91. 10. 50	89. 40. 2	88. 8. 52	86. 37. 20	85. 5. 24	83. 33. 6
	27	82. 0, 25	80. 27. 20	78. 53. 50	77. 19. 57	75. 45. 40	74. 10. 58	72. 35. 51	71. 0. 19
	28	69. 24. 23	67. 48. 1	66. 11. 13	64. 34. 0	62. 56. 22	61. 18. 19	59. 39. 50	58. 0. 56
	M. 1	56. 21. 37	- - -	- - -	- - -	- - -	- - -	- - -	- - -

DISTANCES of the Moon's *Centre* from the Sun, and from Stars *WEST* of her.

Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
The Sun.	6	- - -	- - -	- - -	- - -	40. 48. 27	42. 30. 57	44. 13. 7	45. 54. 58
	7	47. 36. 28	49. 17. 37	50. 58. 25	52. 38. 50	54. 18. 54	55. 58. 33	57. 37. 49	59. 16. 41
	8	60. 55. 10	62. 33. 14	64. 10. 53	65. 48. 8	67. 24. 58	69. 1. 23	70. 37. 23	72. 12. 59
	9	73. 48. 11	75. 22. 57	76. 57. 20	78. 31. 18	80. 4. 53	81. 38. 4	83. 10. 51	84. 43. 16
	10	86. 15. 18	87. 46. 57	89. 18. 14	90. 49. 10	92. 19. 44	93. 49. 56	95. 19. 49	96. 49. 20
	11	98. 18. 32	99. 47. 24	101. 15. 58	102. 44. 14	104. 12. 11	105. 39. 50	107. 7. 13	108. 34. 17
	12	110. 1. 5	111. 27. 37	112. 53. 55	114. 19. 57	115. 45. 45	117. 11. 18	118. 36. 38	120. 1. 44
α Arietis.	11	29. 8. 54	30. 36. 27	32. 4. 25	33. 32. 44	35. 1. 21	36. 30. 14	37. 59. 19	39. 28. 35
	12	40. 57. 57	42. 27. 20	43. 56. 45	45. 26. 11	46. 55. 38	48. 25. 2	49. 54. 23	51. 23. 42
	13	52. 52. 59	54. 22. 10	55. 51. 18	57. 20. 20	58. 49. 19	60. 18. 12	61. 47. 0	63. 15. 43
	14	64. 44. 21	66. 12. 54	67. 41. 21	69. 9. 44	70. 38. 1	- - -	- - -	- - -
Aldebaran.	14	- - -	- - -	- - -	- - -	36. 59. 22	38. 29. 49	40. 0. 10	41. 30. 24
	15	43. 0. 31	44. 30. 32	46. 0. 28	47. 30. 18	49. 0. 2	50. 29. 41	51. 59. 16	53. 28. 46
	16	54. 58. 11	56. 27. 32	57. 56. 50	59. 26. 4	60. 55. 15	62. 24. 23	63. 53. 28	65. 22. 31
	17	66. 51. 31	68. 20. 29	69. 49. 25	71. 18. 19	72. 47. 11	74. 16. 2	75. 44. 52	77. 13. 41
	18	78. 42. 29	- - -	- - -	- - -	- - -	- - -	- - -	- - -

Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
Pollux.	18	36. 51. 48	38. 15. 34	39. 39. 36	41. 3. 55	42. 28. 28	43. 53. 16	45. 18. 15	46. 43. 27
	19	48. 8. 51	49. 34. 23	51. 0. 5	52. 25. 56	53. 51. 55	55. 18. 2	56. 44. 17	58. 10. 40
	20	59. 37. 10	61. 3. 46	62. 30. 30	63. 57. 20	65. 24. 17	66. 51. 20	68. 18. 29	69. 45. 46
	21	71. 13. 9	72. 40. 39	74. 8. 15	75. 35. 59	77. 3. 50	- - -	- - -	- - -
Regulus.	21	- - -	- - -	- - -	- - -	40. 22. 45	41. 52. 12	43. 21. 47	44. 51. 30
	22	46. 21. 20	47. 51. 19	49. 21. 26	50. 51. 43	52. 22. 8	53. 52. 42	55. 23. 25	56. 54. 19
	23	58. 25. 22	59. 56. 36	61. 28. 1	62. 59. 37	64. 31. 25	66. 3. 24	67. 35. 36	69. 8. 1
	24	70. 40. 39	72. 13. 30	73. 46. 36	75. 19. 57	76. 53. 32	- - -	- - -	- - -
Spica ♍.	24	- - -	- - -	- - -	- - -	23. 27. 43	25. 0. 53	26. 34. 24	28. 8. 16
	25	29. 42. 28	31. 17. 1	32. 51. 54	34. 27. 9	36. 2. 44	37. 38. 40	39. 14. 57	40. 51. 35
	26	42. 28. 35	44. 5. 56	45. 43. 40	47. 21. 46	49. 0. 15	50. 39. 7	52. 18. 22	53. 58. 1
	27	55. 38. 4	57. 18. 31	58. 59. 22	60. 40. 38	62. 22. 18	64. 4. 23	65. 46. 53	67. 29. 49
	28	69. 13. 10	70. 56. 57	72. 41. 9	74. 25. 47	76. 10. 50	77. 56. 19	79. 42. 13	81. 28. 32
	M. 1	83. 15. 17	- - -	- - -	- - -	- - -	- - -	- - -	- - -

CONFIGURATIONS of the SATELLITES of JUPITER, at V o'Clock in the *Morning*.

1	·2 4· O ·1 ·3
2	4· ·2 1· O 3·
3	4· O 1 ☌ 3·2
4	4· 3·1 O 2.●
5	·4 3· ·2 O 1·
6	·4 ·3 ·1 O·2
7	.3○ ·4 O 2· 1.●
8	·4 2· O·1 ·3
9	·2 1· O·4 3·
10	O ·1 2 ☌ 3 ·4
11	·1 3· O 2· ·4
12	3· 2· O 1· ·4
13	.2○ ·3 ·1 O ·4
14	1.● ·3 O 2· 4·
15	2· O·1 ·3 4·
16	·2 1· O 4· ·3
17	O 4·1 ·2 3·
18	4·1· 3· O 2·
19	4· 3· 2· O 1·
20	4· ·3 ·1 O .2○
21	4· ·3 O 1· 2·
22	·4 2· O ·3 .1○
23	·4 ·2 1· O ·3
24	·4 O ·1 ·2 3·
25	·4 1· O 2· 3.●
26	3· 2· O ·4 ·1
27	·3 ·1 ·2 O ·4
28	·3 O 1· ·2 ·4

Days of the Week.	Days of the Month.	*Sundays, and other remarkable Days.*
Sun.	1	*Quinquagesima Sunday.*
M.	2	Chad. [David.
Tu.	3	*Shrove Tuesday.*
W.	4	*Ash Wednesday.*
Th.	5	
F.	6	
Sa.	7	Perpetua.
Sun.	8	*1st Sunday in Lent.*
M.	9	
Tu.	10	
W.	11	
Th.	12	Gregory, Martyr.
F.	13	
Sa.	14	
Sun.	15	*2d Sunday in Lent.*
M.	16	
Tu.	17	
W.	18	Edw. K. of West Saxons.
Th.	19	
F.	20	
Sa.	21	Benedict.
Sun.	22	*3d Sunday in Lent.*
M.	23	
Tu.	24	
W.	25	*Annunc. of B. V. Mary.*
Th.	26	
F.	27	
Sa.	28	
Sun.	29	*4th Sund. in Lent. Mid L.*
M.	30	[*Sunday.*
Tu.	31	

Phases of the MOON.

	D.	H.	M.
● New Moon	5.	0.	36
☽ *First Quarter*	11.	21.	49
○ Full Moon	20.	1.	51
☾ *Last Quarter*	27.	19.	19

Other *Phenomena.*

D.	H.	M.	
2.	4.	-	☽ ☌ ♍.
4.	3.	-	☽ ☌ ♒.
4.	10.	-	☽ ☿.
7.	5.	-	☽ ☍ ♓.
7.	18.	-	☽ ☊ ♓.
10.	14.	-	☽ 1 ☌ ♉.
10.	14.	-	☽ 2 ☌ ♉.
10.	20.	-	☽ ☌ ♉.
13.	-.	-	☿ Stationary.
15.	22.	-	☽ 1 ☌ ♋.
15.	22.	-	☿ ☌ ♒.
15.	23.	-	☽ 2 ☌ ♋.
16.	16.	-	☽ ☍ ☊.
16.	21.	-	☽ ☊ ☊.
17.	7.	-	☽ ☌ ☊.
19.	5.	-	☽ ☍ ☊.
20.	-.	-	☽ eclipsed, invisible.
20.	8.	37	☉ enters ♈.
20.	16.	-	☿ ☊ ♒.
21.	11.	-	☽ ☌ ♏.
22.	19.	-	☽ ☌ ♏.
24.	10.	-	☽ ☍ ♎.
24.	19.	-	☽ ☌ ♎.
25.	11.	-	☽ ☊ Oph.
26.	22.	-	☿ ☌ ♒.
28.	-.	-	♄ Stationary.
29.	13.	-	☽ ☌ ♍.
31.	-.	-	♃ Stationary.
31.	13.	-	☽ ☌ ♒.

Days of the Week.	Days of the Month.	THE SUN'S Longitude.	Rt. Ascen. *in Time.*	Declin. *South.*	Diff.	Equation of Time. *Add to app. Time.*	Diff.
		S. D. M. S.	H. M. S.	D. M. S.	M. S.	M. S.	S.
Sun.	1	11. 10. 41. 58	22. 48. 45, 6	7. 33. 40	22. 51	12. 38, 5	12, 2
M.	2	11. 11. 42. 5	22. 52. 29, 9	7. 10. 49	22. 58	12. 26, 3	12, 6
Tu.	3	11. 12. 42. 12	22. 56. 13, 8	6. 47. 51	23. 3	12. 13, 7	13, 1
W.	4	11. 13. 42. 16	22. 59. 57, 2	6. 24. 48	23. 8	12. 0, 6	13, 6
Th.	5	11. 14. 42. 19	23. 3. 40, 1	6. 1. 40	23. 13	11. 47, 0	14, 0
F.	6	11. 15. 42. 20	23. 7. 22, 6	5. 38. 27	23. 18	11. 33, 0	14, 4
Sa.	7	11. 16. 42. 19	23. 11. 4, 7	5. 15. 9	23. 22	11. 18, 6	14, 8
Sun.	8	11. 17. 42. 16	23. 14. 46, 4	4. 51. 47	23. 25	11. 3, 8	15, 2
M.	9	11. 18. 42. 11	23. 18. 27, 7	4. 28. 22	23. 29	10. 48, 6	15, 6
Tu.	10	11. 19. 42. 3	23. 22. 8, 6	4. 4. 53	23. 31	10. 33, 0	16, 0
W.	11	11. 20. 41. 53	23. 25. 49, 2	3. 41. 22	23. 34	10. 17, 0	16, 2
Th.	12	11. 21. 41. 41	23. 29. 29, 4	3. 17. 48	23. 36	10. 0, 8	16, 6
F.	13	11. 22. 41. 26	23. 33. 9, 4	2. 54. 12	23. 38	9. 44, 2	16, 9
Sa.	14	11. 23. 41. 9	23. 36. 49, 0	2. 30. 34	23. 40	9. 27, 3	17, 2
Sun.	15	11. 24. 40. 50	23. 40. 28, 3	2. 6. 54	23. 40	9. 10, 1	17, 4
M.	16	11. 25. 40. 28	23. 44. 7, 4	1. 43. 14	23. 41	8. 52, 7	17, 6
Tu.	17	11. 26. 40. 5	23. 47. 46, 3	1. 19. 33	23. 41	8. 35, 1	17, 9
W.	18	11. 27. 39. 39	23. 51. 24, 9	0. 55. 52	23. 42	8. 17, 2	18, 0
Th.	19	11. 28. 39. 10	23. 55. 3, 4	0. 32. 10	23. 41	7. 59, 2	18, 2
F.	20	11. 29. 38. 40	23. 58. 41, 7	0. 8. 29	23. 40	7. 41, 0	18, 3
				North.			
Sa.	21	0. 0. 38. 8	0. 2. 19, 9	0. 15. 11	23. 39	7. 22, 7	18, 4
Sun.	22	0. 1. 37. 34	0. 5. 58, 0	0. 38. 50	23. 38	7. 4, 3	18, 5
M.	23	0. 2. 36. 58	0. 9. 36, 0	1. 2. 28	23. 36	6. 45, 8	18, 6
Tu.	24	0. 3. 36. 20	0. 13. 14, 0	1. 26. 4	23. 35	6. 27, 2	18, 6
W.	25	0. 4. 35. 40	0. 16. 51, 9	1. 49. 39	23. 31	6. 8, 6	18, 6
Th.	26	0. 5. 34. 58	0. 20. 29, 7	2. 13. 10	23. 30	5. 50, 0	18, 6
F.	27	0. 6. 34. 15	0. 24. 7, 6	2. 36. 40	23. 26	5. 31, 4	18, 6
Sa.	28	0. 7. 33. 30	0. 27. 45, 6	3. 0. 6	23. 23	5. 12, 8	18, 5
Sun.	29	0. 8. 32. 43	0. 31. 23, 6	3. 23. 29	23. 19	4. 54, 3	18, 4
M.	30	0. 9. 31. 55	0. 35. 1, 6	3. 46. 48	23. 15	4. 35, 9	18, 4
Tu.	31	0. 10. 31. 5	0. 38. 39, 8	4. 10. 3	23. 10	4. 17, 5	18, 3

Days	Time of ⊙'s Semidiam. passing Merid.	THE SUN's Semi-diameter.	Hourly Motion.	Logar. Distance.	Place of the ☽'s Node.
	M. S.	M. S.	M. S.		S. D. M.
1	1. 5, 2	16. 9, 5	2. 30, 3	9. 996336	6. 9. 12
7	1. 4, 8	16. 8, 0	2. 29, 9	9. 997022	6. 8. 53
13	1. 4, 5	16. 6, 4	2. 29, 4	9. 997716	6. 8. 34
19	1. 4, 3	16. 4, 8	2. 28, 9	9. 998437	6. 8. 15
25	1. 4, 2	16. 3, 2	2. 28, 4	9. 999192	6. 7. 56

ECLIPSES OF THE SATELLITES OF JUPITER.

MEAN TIME.

I. Satellite.		II. Satellite.		III. Satellite.	
Immersions.					
Days.	H. M. S.	Days.	H. M. S.	Days.	H. M. S.
1	14. 42. 22	4	1. 26. 56 Im.	* 3	15. 7. 59 Im.
3	9. 10. 45	4	3. 52. 22 E.	* 3	17. 25. 55 E.
5	3. 39. 4	7	14. 43. 29 Im.	10	19. 5. 25 Im.
6	22. 7. 28	* 7	17. 8. 56 E.	10	21. 24. 4 E.
* 8	16. 35. 48		*Immersions.*	17	23. 3. 33 Im.
10	11. 4. 11	11	4. 0. 6	18	1. 22. 51 E.
12	5. 32. 31	*14	17. 16. 39	25	3. 1. 12 Im.
14	0. 0. 54	18	6. 33. 12	25	5. 21. 11 E.
15	18. 29. 15	21	19. 49. 44		
17	12. 57. 38	25	9. 6. 14		
19	7. 25. 59	28	22. 22. 45		
21	1. 54. 24				
22	20. 22. 44				
* 24	14. 51. 9				
26	9. 19. 30			IV. Satellite.	
28	3. 47. 55				
29	22. 16. 17				
* 31	16. 44. 43				

Days	THE PLANETS' Heliocentric Long.	Heliocentric Lat.	Geocentric Long.	Geocentric Lat.	Declin.	Rt. Asc. in Time.	Passage Merid.
	S. D. M.	D. M.	S. D. M.	D. M.	D. M.	H. M.	H. M.
	☿		*MERCURY.*			Gr. Elong. 27d.	
1	5. 13. 43	6. 13 N	11. 8. 56	3. 40 N	4. 50 S	22. 37	23. 41
4	5. 26. 22	5. 22	11. 5. 55	3. 19	6. 15	22. 26	23. 20
7	6. 7. 55	4. 22	11. 3. 28	2. 46	7. 40	22. 18	23. 1
10	6. 18. 34	3. 16	11. 1. 54	2. 4	8. 52	22. 13	22. 47
13	6. 28. 28	2. 9	11. 1. 18	1. 21	9. 46	22. 11	22. 36
16	7. 7. 48	1. 2 N	11. 1. 38	0. 38 N	10. 19	22. 14	22. 28
19	7. 16. 41	0. 3 S	11. 2. 46	0. 2 S	10. 32	22. 19	22. 23
22	7. 25. 16	1. 6	11. 4. 33	0. 37	10. 25	22. 27	22. 21
25	8. 3. 38	2. 6	11. 6. 56	1. 8	10. 2	22. 36	22. 20
28	8. 11. 53	3. 2	11. 9. 47	1. 34	9. 22	22. 48	22. 21
31	8. 20. 7	3. 55	11. 13. 1	1. 56	8. 27	23. 0	22. 22
	♀		*VENUS.*				
1	9. 21. 40	2. 1 S	10. 20. 11	0. 56 S	15. 39 S	21. 32	22. 44
7	10. 1. 9	2. 27	10. 27. 38	1. 7	13. 21	22. 1	22. 51
13	10. 10. 38	2. 48	11. 5. 4	1. 16	10. 50	22. 30	22. 57
19	10. 20. 7	3. 5	11. 12. 30	1. 22	8. 9	22. 58	23. 4
25	10. 29. 37	3. 16	11. 19. 56	1. 27	5. 19	23. 25	23. 9
	♂		*MARS.*				
1	2. 5. 40	0. 33 N	1. 4. 3	0. 27 N	13. 18 N	2. 7	3. 18
7	2. 8. 49	0. 39	1. 8. 11	0. 31	14. 44	2. 23	3. 11
13	2. 11. 55	0. 45	1. 12. 18	0. 35	16. 6	2. 39	3. 5
19	2. 15. 0	0. 50	1. 16. 24	0. 38	17. 22	2. 55	3. 0
25	2. 18. 3	0. 55	1. 20. 29	0. 41	18. 33	3. 11	2. 54
	♃		*JUPITER.*			□ 4d. 9½h.	
1	8. 3. 9	0. 46 N	8. 13. 49	0. 46 N	21. 43 S	16. 50	17. 59
7	8. 3. 37	0. 45	8. 14. 19	0. 47	21. 46	16. 52	17. 39
13	8. 4. 6	0. 45	8. 14. 43	0. 47	21. 48	16. 54	17. 18
19	8. 4. 34	0. 44	8. 15. 0	0. 47	21. 50	16. 55	16. 58
25	8. 5. 2	0. 44	8. 15. 12	0. 47	21. 51	16. 56	16. 37
	♄		*SATURN.*				
1	4. 2. 21	0. 26 N	3. 28. 6	0. 29 N	21. 2 N	8. 1	9. 11
7	4. 2. 34	0. 27	3. 27. 50	0. 29	21. 5	8. 0	8. 48
13	4. 2. 47	0. 28	3. 27. 38	0. 29	21. 8	7. 59	8. 25
19	4. 3. 0	0. 28	3. 27. 30	0. 30	21. 10	7. 59	8. 2
25	4. 3. 14	0. 29	3. 27. 25	0. 30	21. 11	7. 58	7. 40
	♅		*GEORGIAN.*				
1	10. 2. 46	0. 35 S	10. 4. 28	0. 34 S	19. 43 S	20. 28	21. 36
11	10. 2. 53	0. 35	10. 4. 56	0. 34	19. 36	20. 30	21. 1
21	10. 2. 59	0. 35	10. 5. 22	0. 34	19. 30	20. 31	20. 26

Days of the Week.	Days of the Month.	The MOON's Longitude. Noon.	Longitude. Midnight.	Latitude. Noon.	Latitude. Midnight.
		S. D. M. S.	S. D. M. S.	D. M. S.	D. M. S.
Sun.	1	9. 14. 29. 49	9. 21. 43. 18	5. 12. 2 N	5. 4. 57 N
M.	2	9. 29. 2. 53	10. 6. 27. 56	4. 52. 51	4. 35. 43
Tu.	3	10. 13. 57. 37	10. 21. 30. 56	4. 13. 42	3. 47. 5
W.	4	10. 29. 6. 45	11. 6. 43. 49	3. 16. 18	2. 41. 55
Th.	5	11. 14. 20. 49	11. 21. 56. 29	2. 4. 37	1. 25. 11
F.	6	11. 29. 29. 35	0. 6. 58. 59	0. 44. 26 N	0. 3. 13 N
Sa.	7	0. 14. 23. 44	0. 21. 43. 2	0. 37. 39 S	1. 17. 25 S
Sun.	8	0. 28. 56. 13	1. 6. 2. 56	1. 55. 24	2. 31. 1
M.	9	1. 13. 2. 54	1. 19. 56. 2	3. 3. 47	3. 33. 20
Tu.	10	1. 26. 42. 24	2. 3. 22. 12	3. 59. 24	4. 21. 48
W.	11	2. 9. 55. 44	2. 16. 23. 24	4. 40. 23	4. 55. 5
Th.	12	2. 22. 45. 35	2. 29. 2. 48	5. 5. 56	5. 12. 57
F.	13	3. 5. 15. 33	3. 11. 24. 20	5. 16. 13	5. 15. 48
Sa.	14	3. 17. 29. 40	3. 23. 32. 3	5. 11. 49	5. 4. 25
Sun.	15	3. 29. 32. 0	4. 5. 29. 58	4. 53. 43	4. 39. 52
M.	16	4. 11. 26. 25	4. 17. 21. 46	4. 23. 4	4. 3. 30
Tu.	17	4. 23. 16. 24	4. 29. 10. 41	3. 41. 22	3. 16. 52
W.	18	5. 5. 4. 58	5. 10. 59. 35	2. 50. 16	2. 21. 48
Th.	19	5. 16. 54. 47	5. 22. 50. 52	1. 51. 44	1. 20. 22
F.	20	5. 28. 48. 6	6. 4. 46. 41	0. 48. 1 S	0. 15. 0 S
Sa.	21	6. 10. 46. 53	6. 16. 48. 57	0. 18. 20 N	0. 51. 39 N
Sun.	22	6. 22. 53. 6	6. 28. 59. 36	1. 24. 34	1. 56. 45
M.	23	7. 5. 8. 41	7. 11. 20. 37	2. 27. 48	2. 57. 21
Tu.	24	7. 17. 35. 42	7. 23. 54. 11	3. 25. 2	3. 50. 30
W.	25	8. 0. 16. 22	8. 6. 42. 32	4. 13. 21	4. 33. 16
Th.	26	8. 13. 12. 58	8. 19. 47. 57	4. 49. 54	5. 2. 55
F.	27	8. 26. 27. 43	9. 3. 12. 30	5. 12. 4	5. 17. 2
Sa.	28	9. 10. 2. 25	9. 16. 57. 35	5. 17. 37	5. 13. 38
Sun.	29	9. 23. 58. 0	10. 1. 3. 33	5. 4. 58	4. 51. 35
M.	30	10. 8. 14. 2	10. 15. 29. 7	4. 33. 31	4. 10. 54
Tu.	31	10. 22. 48. 21	11. 0. 11. 8	3. 43. 59	3. 13. 8

Days of the Month.	Age.	Pass. Mer.	THE MOON's Right Ascension. Noon.	Right Ascension. Midnight.	Declination. Noon.	Declination. Midnight.
	D.	H. M.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
1	27	21. 1	285. 9. 10	292. 38. 3	17. 29. 56 S	16. 41. 6 S
2	28	22. 0	300. 8. 57	307. 40. 23	15. 35. 16	14. 13. 10
3	29	22. 58	315. 10. 57	322. 39. 33	12. 36. 1	10. 45. 26
4	30	23. 55	330. 5. 23	337. 27. 55	8. 43. 27	6. 32. 26
5	1	♂	344. 46. 54	352. 2. 21	4. 14. 57 S	1. 53. 41 S
6	2	0. 51	359. 14. 24	6. 23. 23	0. 28. 39 N	2. 49. 24 N
7	3	1. 47	13. 29. 37	20. 33. 26	5. 6. 6	7. 16. 26
8	4	2. 41	27. 35. 5	34. 34. 47	9. 18. 25	11. 10. 20
9	5	3. 35	41. 32. 32	48. 28. 14	12. 50. 47	14. 18. 39
10	6	4. 29	55. 21. 39	62. 12. 27	15. 33. 8	16. 33. 41
11	7	5. 21	69. 0. 11	75. 44. 22	17. 20. 3	17. 52. 10
12	8	6. 13	82. 24. 28	89. 0. 1	18. 10. 11	18. 14. 25
13	9	7. 3	95. 30. 36	101. 55. 51	18. 5. 19	17. 43. 28
14	10	7. 51	108. 15. 34	114. 29. 41	17. 9. 34	16. 24. 20
15	11	8. 38	120. 38. 16	126. 41. 29	15. 28. 33	14. 23. 4
16	12	9. 23	132. 39. 40	138. 33. 16	13. 8. 45	11. 46. 27
17	13	10. 8	144. 22. 48	150. 8. 55	10. 17. 5	8. 41. 34
18	14	10. 51	155. 52. 19	161. 33. 47	7. 0. 48	5. 15. 44
19	15	11. 34	167. 14. 8	172. 54. 13	3. 27. 22 N	1. 36. 39 N
20	16	12. 17	178. 34. 55	184. 17. 7	0. 15. 25 S	2. 7. 47 S
21	17	13. 1	190. 1. 44	195. 49. 38	3. 59. 23	5. 49. 6
22	18	13. 46	201. 41. 42	207. 38. 46	7. 35. 49	9. 18. 21
23	19	14. 33	213. 41. 34	219. 50. 46	10. 55. 30	12. 26. 4
24	20	15. 22	226. 6. 53	232. 30. 21	13. 48. 46	15. 2. 23
25	21	16. 13	239. 1. 22	245. 39. 54	16. 5. 41	16. 57. 26
26	22	17. 6	252. 25. 46	259. 18. 30	17. 36. 33	18. 1. 58
27	23	18. 1	266. 17. 26	273. 21. 43	18. 12. 46	18. 8. 17
28	24	18. 57	280. 30. 19	287. 42. 10	17. 48. 0	17. 11. 42
29	25	19. 53	294. 56. 9	302. 11. 14	16. 19. 27	15. 11. 38
30	26	20. 50	309. 26. 31	316. 41. 16	13. 48. 58	12. 12. 31
31	27	21. 46	323. 55. 1	331. 7. 27	10. 23. 39	8. 24. 6

Days of the Week.	Days of the Month.	The MOON's Semidiameter.		Hor. Parallax.		Proportional Logarithm.	
		Noon.	*Midnight.*	*Noon.*	*Midnight.*		
		M. S.	M. S.	M. S.	M. S.	*Noon.*	*Midn.*
Sun.	1	16. 13	16. 20	59. 32	59. 58	4805	4774
M.	2	16. 26	16. 32	60. 20	60. 40	4747	4723
Tu.	3	16. 37	16. 40	60. 57	61. 10	4703	4688
W.	4	16. 43	16. 44	61. 19	61. 23	4677	4672
Th.	5	16. 43	16. 41	61. 21	61. 14	4675	4683
F.	6	16. 38	16. 34	61. 2	60. 46	4697	4716
Sa.	7	16. 28	16. 22	60. 26	60. 3	4740	4768
Sun.	8	16. 15	16. 7	59. 37	59. 9	4799	4833
M.	9	15. 59	15. 51	58. 40	58. 11	4869	4905
Tu.	10	15. 43	15. 35	57. 42	57. 13	4941	4977
W.	11	15. 28	15. 21	56. 46	56. 21	5012	5044
Th.	12	15. 15	15. 9	55. 58	55. 36	5073	5102
F.	13	15. 3	14. 59	55. 16	54. 59	5128	5150
Sa.	14	14. 55	14. 51	54. 44	54. 31	5170	5187
Sun.	15	14. 48	14. 46	54. 20	54. 12	5202	5213
M.	16	14. 44	14. 43	54. 6	54. 1	5221	5227
Tu.	17	14. 42	14. 42	53. 58	53. 57	5231	5233
W.	18	14. 42	14. 43	53. 57	53. 59	5233	5230
Th.	19	14. 43	14. 45	54. 2	54. 6	5226	5221
F.	20	14. 46	14. 48	54. 12	54. 19	5213	5203
Sa.	21	14. 50	14. 53	54. 27	54. 36	5193	5181
Sun.	22	14. 56	14. 59	54. 47	54. 58	5166	5152
M.	23	15. 2	15. 6	55. 11	55. 25	5135	5116
Tu.	24	15. 10	15. 14	55. 40	55. 56	5097	5076
W.	25	15. 19	15. 24	56. 14	56. 32	5053	5030
Th.	26	15. 30	15. 35	56. 52	57. 13	5004	4977
F.	27	15. 41	15. 47	57. 34	57. 56	4951	4923
Sa.	28	15. 54	16. 0	58. 19	58. 42	4895	4866
Sun.	29	16. 6	16. 12	59. 5	59. 27	4838	4811
M.	30	16. 18	16. 23	59. 48	60. 6	4786	4764
Tu.	31	16. 27	16. 31	60. 22	60. 36	4745	4728

DISTANCES of the Moon's *Centre* from the Sun, and from Stars *EAST* of her.

Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
The Sun.	1	56. 21. 37	54. 41. 54	53. 1. 45	51. 21. 13	49. 40. 16	47. 58. 56	46. 17. 13	44. 35. 9
	2	42. 52. 42	41. 9. 54	39. 26. 46	- - -	- - -	- - -	- - -	- - -
Pollux.	8	82. 12. 35	80. 27. 17	78. 42. 26	76. 58. 2	75. 14. 7	73. 30. 40	71. 47. 42	70. 5. 14
	9	68. 23. 15	66. 41. 46	65. 0. 49	63. 20. 22	61. 40. 26	60. 1. 1	58. 22. 9	56. 43. 49
	10	55. 6. 2	53. 28. 47	51. 52. 6	50. 15. 59	48. 40. 27	47. 5. 30	45. 31. 8	43. 57. 23
	11	42. 24. 15	- - -	- - -	- - -	- - -	- - -	- - -	- - -
Regulus.	11	77. 36. 44	75. 59. 46	74. 23. 10	72. 46. 57	71. 11. 6	69. 35. 37	68. 0. 28	66. 25. 40
	12	64. 51. 13	63. 17. 5	61. 43. 16	60. 9. 46	58. 36. 34	57. 3. 40	55. 31. 2	53. 58. 41
	13	52. 26. 37	50. 54. 48	49. 23. 14	47. 51. 54	46. 20. 50	44. 49. 59	43. 19. 22	41. 48. 57
	14	40. 18. 46	38. 48. 47	37. 18. 59	35. 49. 24	34. 20. 0	32. 50. 48	31. 21. 46	29. 52. 56
	15	28. 24. 17	- - -	- - -	- - -	- - -	- - -	- - -	- - -
Spica ♍.	15	81. 47. 19	80. 18. 5	78. 48. 57	77. 19. 54	75. 50. 57	74. 22. 4	72. 53. 16	71. 24. 31
	16	69. 55. 51	68. 27. 14	66. 58. 39	65. 30. 7	64. 1. 38	62. 33. 10	61. 4. 43	59. 36. 17
	17	58. 7. 53	56. 39. 29	55. 11. 5	53. 42. 41	52. 14. 17	50. 45. 52	49. 17. 26	47. 49. 0
	18	46. 20. 32	44. 52. 2	43. 23. 31	41. 54. 58	40. 26. 24	38. 57. 48	37. 29. 9	36. 0. 29
	19	34. 31. 47	- - -	- - -	- - -	- - -	- - -	- - -	- - -

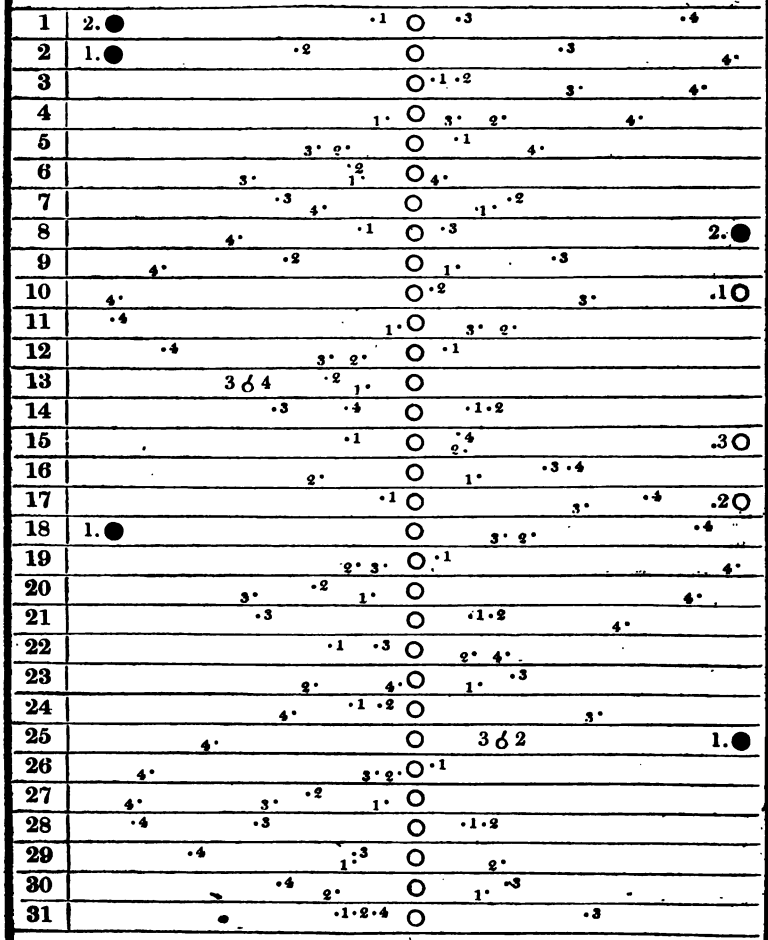
Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
Antares.	19	80. 21. 8	78. 53. 6	77. 24. 59	75. 56. 48	74. 28. 34	73. 0. 15	71. 31. 53	70. 3. 27
	20	68. 34. 58	67. 6. 25	65. 37. 48	64. 9. 7	62. 40. 23	61. 11. 34	59. 42. 42	58. 13. 47
	21	56. 44. 48	55. 15. 45	53. 46. 39	52. 17. 30	50. 48. 19	49. 19. 5	47. 49. 49	46. 20. 32
	22	44. 51. 14	43. 21. 54	41. 52. 35	40. 23. 18	38. 54. 3	37. 24. 51	35. 55. 44	34. 26. 43
	23	32. 57. 47	- - -	- - -	- - -	- - -	- - -	- - -	- - -
α Aquilæ.	23	83. 45. 17	82. 20. 47	80. 56. 12	79. 31. 31	78. 6. 45	76. 41. 55	75. 17. 2	73. 52. 8
	24	72. 27. 10	71. 2. 11	69. 37. 12	68. 12. 15	66. 47. 18	65. 22. 22	63. 57. 32	62. 32. 47
	25	61. 8. 8	59. 43. 37	58. 19. 15	56. 55. 3	55. 31. 3	- - -	- - -	- - -
Fomalhaut.	25	- - -	- - -	- - -	- - -	86. 45. 14	85. 16. 48	83. 48. 10	82. 19. 21
	26	80. 50. 21	79. 21. 11	77. 51. 52	76. 22. 25	74. 52. 50	73. 23. 7	71. 53. 19	70. 23. 26
	27	68. 53. 28	67. 23. 25	65. 53. 21	64. 23. 18	62. 53. 14	61. 23. 14	59. 53. 18	58. 23. 28
	28	56. 53. 46	- - -	- - -	- - -	- - -	- - -	- - -	- - -
The Sun.	25	- - -	- - -	121. 15. 24	119. 46. 16	118. 16. 55	116. 47. 19	115. 17. 27	113. 47. 20
	26	112. 16. 58	110. 46. 20	109. 15. 25	107. 44. 14	106. 12. 46	104. 41. 1	103. 8. 59	101. 36. 39
	27	100. 4. 1	98. 31. 4	96. 57. 49	95. 24. 15	93. 50. 23	92. 16. 12	90. 41. 42	89. 6. 52
	28	87. 31. 43	85. 56. 14	84. 20. 24	82. 44. 15	81. 7. 46	79. 30. 56	77. 53. 47	76. 16. 17
	29	74. 38. 27	73. 0. 16	71. 21. 46	69. 42. 56	68. 3. 46	66. 24. 16	64. 44. 26	63. 4. 18
	30	61. 23. 50	59. 43. 3	58. 1. 58	56. 20. 35	54. 38. 54	52. 56. 55	51. 14. 40	49. 32. 9
	31	47. 49. 22	46. 6. 19	44. 23. 2	42. 39. 31	40. 55. 47	39. 11. 51	- - -	- - -

DISTANCES of the Moon's *Centre* from the Sun, and from Stars *WEST* of her.

Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
Antares.	1	38. 20. 0	40. 3. 58	41. 48. 33	43. 33. 45	45. 19. 31	47. 5. 50	48. 52. 42	50. 40. 3
	2	52. 27. 54	54. 16. 12	56. 4. 57	57. 54. 7	59. 43. 40	- - -	- - -	- - -
The Sun.	7	- - -	- - -	- - -	- - -	- - -	- - -	- - -	39. 35. 44
	8	41. 16. 10	42. 56. 11	44. 35. 47	46. 14. 58	47. 53. 43	49. 32. 0	51. 9. 51	52. 47. 16
	9	54. 24. 14	56. 0. 45	57. 36. 49	59. 12. 27	60. 47. 38	62. 22. 21	63. 56. 38	65. 30. 29
	10	67. 3. 53	68. 36. 51	70. 9. 24	71. 41. 32	73. 13. 15	74. 44. 32	76. 15. 25	77. 45. 55
	11	79. 16. 1	80. 45. 44	82. 15. 5	83. 44. 4	85. 12. 41	86. 40. 56	88. 8. 50	89. 36. 25
	12	91. 3. 39	92. 30. 34	93. 57. 11	95. 23. 31	96. 49. 32	98. 15. 16	99. 40. 44	101. 5. 57
	13	102. 30. 53	103. 55. 34	105. 20. 2	106. 44. 16	108. 8. 16	109. 32. 4	110. 55. 40	112. 19. 4
	14	113. 42. 17	115. 5. 19	116. 28. 12	117. 50. 55	119. 13. 29	120. 35. 54	- - -	- - -
α Arietis.	11	- - -	- - -	- - -	- - -	43. 34. 43	45. 5. 52	46. 36. 54	48. 7. 49
	12	49. 38. 37	51. 9. 17	52. 39. 49	54. 10. 12	55. 40. 26	57. 10. 30	58. 40. 24	60. 10. 9
	13	61. 39. 45	63. 9. 10	64. 38. 26	66. 7. 32	67. 36. 29	69. 5. 16	70. 33. 55	72. 2. 25
	14	73. 30. 47	74. 59. 0	76. 27. 6	77. 55. 5	79. 22. 55	- - -	- - -	- - -
Aldebaran.	14	- - -	- - -	- - -	- - -	45. 55. 43	47. 25. 34	48. 55. 18	50. 24. 54
	15	51. 54. 23	53. 23. 45	54. 53. 2	56. 22. 13	57. 51. 18	59. 20. 19	60. 49. 16	62. 18. 9
	16	63. 46. 59	65. 15. 45	66. 44. 29	68. 13. 11	69. 41. 51	71. 10. 29	72. 39. 6	74. 7. 43
	17	75. 36. 19	77. 4. 55	78. 33. 31	80. 2. 8	81. 30. 45	- - -	- - -	- - -

Stars' Names.	Days	*Noon,*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
Pollux.	17	- - -	- - -	- - -	- - -	39. 31. 29	40. 55. 35	42. 19. 57	43. 44. 35
	18	45. 9. 26	46. 34. 31	47. 59. 49	49. 25. 19	50. 51. 2	52. 16. 54	53. 42. 58	55. 9. 11
	19	56. 35. 34	58. 2. 6	59. 28. 48	60. 55. 38	62. 22. 38	63. 49. 46	65. 17. 3	66. 44. 28
	20	68. 12. 2	69. 39. 43	71. 7. 33	72. 35. 30	74. 3. 34	- - -	- - -	- - -
Regulus.	20	- - -	- - -	- - -	- - -	37. 19. 28	38. 49. 12	40. 19. 4	41. 49. 5
	21	43. 19. 14	44. 49. 31	46. 19. 57	47. 50. 31	49. 21. 14	50. 52. 4	52. 23. 4	53. 54. 11
	22	55. 25. 28	56. 56. 53	58. 28. 28	60. 0. 11	61. 32. 4	63. 4. 6	64. 36. 17	66. 8. 38
	23	67. 41. 9	69. 13. 49	70. 46. 40	72. 19. 41	73. 52. 53	75. 26. 15	76. 59. 49	78. 33. 35
	24	80. 7. 31	- - -	- - -	- - -	- - -	- - -	- - -	- - -
Spica ♍.	24	26. 41. 1	28. 14. 38	29. 48. 30	31. 22. 38	32. 57. 1	34. 31. 39	36. 6. 32	37. 41. 41
	25	39. 17. 5	40. 52. 44	42. 28. 38	44. 4. 48	45. 41. 13	47. 17. 53	48. 54. 50	50. 32. 3
	26	52. 9. 33	53. 47. 19	55. 25. 22	57. 3. 42	58. 42. 19	60. 21. 13	62. 0. 25	63. 39. 56
	27	65. 19. 44	66. 59. 51	68. 40. 16	70. 21. 1	72. 2. 4	73. 43. 26	75. 25. 8	77. 7. 10
	28	78. 49. 31	- - -	- - -	- - -	- - -	- - -	- - -	- - -
Antares.	28	34. 4. 12	35. 43. 4	37. 22. 32	39. 2. 35	40. 43. 12	42. 24. 22	44. 6. 3	45. 48. 14
	29	47. 30. 56	49. 14. 4	50. 57. 39	52. 41. 40	54. 26. 8	56. 11. 0	57. 56. 16	59. 41. 55
	30	61. 27. 57	63. 14. 21	65. 1. 6	66. 48. 12	68. 35. 38	70. 23. 24	72. 11. 29	73. 59. 51
	31	75. 48. 31	77. 37. 28	79. 26. 39	81. 16. 5	83. 5. 45	84. 55. 38	86. 45. 42	88. 35. 58
	A. 1	90. 26. 24	- - -	- - -	- - -	- - -	- - -	- - -	- - -

CONFIGURATIONS of the SATELLITES of JUPITER, at ½ an Hour past III o'Clock in the *Morning*.



Days of the Week.	Days of the Month.	*Sundays, and other remarkable Days.*
W.	1	
Th.	2	
F.	3	Richard, Bp. of Chich.
Sa.	4	St. Ambrose.
Sun.	5	*5th Sunday in Lent.*
M.	6	
Tu.	7	
W.	8	
Th.	9	
F.	10	Cambridge Term ends.
Sa.	11	Oxford Term ends.
Sun.	12	*6th Sunday in Lent.*
M.	13	[*Palm Sund.*
Tu.	14	
W.	15	
Th.	16	
F.	17	*Good Friday.*
Sa.	18	
Sun.	19	*Easter Day.* Alphege.
M.	20	*Easter Monday.*
Tu.	21	*Easter Tuesday.*
W.	22	
Th.	23	St. George. *K. Geo. IV.*
F.	24	[*b. d. kept.*
Sa.	25	*St. Mark. Ds. of Glouc. b.*
Sun.	26	*1st Sun. aft. East. Low S.*
M.	27	
Tu.	28	
W.	29	Oxf. and Camb. Terms b.
Th.	30	

Phases of the MOON.

	D.	H.	M.
● New Moon	3.	10.	21
☽ *First Quarter* ...	10.	14.	7
○ Full Moon	18.	18.	22
☾ *Last Quarter* ...	26.	2.	55

Other *Phenomena.*

D.	H.	M.	
1.	2.	-	☿ ☌ ♒.
3.	-.	-	☉ eclipsed, invisible.
4.	5.	-	☽ ☍ ♓.
6.	23.	-	☽ 1 ☌ ♉.
7.	0.	-	☽ 2 ☌ ♉.
7.	5.	-	☽ ☌ ♉.
9.	16.	-	♂ ☌ ♉.
12.	5.	-	☽ 1 ☌ ♋.
12.	6.	-	☽ 2 ☌ ♋.
12.	23.	-	☽ ☍ ♌.
13.	4.	-	☽ ☍ ♌.
13.	14.	-	☽ ☍ ♌.
15.	12.	-	☽ ☍ ♌.
15.	20.	-	♀ ☍ ♓.
16.	23.	-	♂ 2 ✶ ♉.
17.	18.	-	☽ ☌ ♍.
19.	1.	-	☽ ✶ ♍.
19.	21.	7	☉ enters ♉.
20.	16.	-	☽ ☍ ♎.
21.	0.	-	☽ ☌ ♎.
21.	17.	-	☽ ☍ Oph.
22.	18.	-	♀ ☍ ♓.
25.	19.	-	☽ ☍ ♑.
27.	1.	-	☿ ☍ ♓.
27.	21.	-	☽ ☌ ♒.

Days of the Week.	Days of the Month.	The SUN's Longitude.	Rt. Ascen. *in Time.*	Declin. *North.*	Diff.	Equation of Time. *Add to app. Time.*	Diff.
		S. D. M. S.	H. M. S.	D. M. S.	M. S.	M. S.	S.
W.	1	0. 11. 30. 12	0. 42. 18, 0	4. 33. 13		3. 59, 2	
					23. 6		18, 1
Th.	2	0. 12. 29. 19	0. 45. 56, 4	4. 56. 19		3. 41, 1	
					23. 0		18, 0
F.	3	0. 13. 28. 23	0. 49. 34, 9	5. 19. 19		3. 23, 1	
					22. 55		17, 8
Sa.	4	0. 14. 27. 25	0. 53. 13, 5	5. 42. 14		3. 5, 3	
					22. 49		17, 7
Sun.	5	0. 15. 26. 25	0. 56. 52, 3	6. 5. 3		2. 47, 6	
					22. 42		17, 5
M.	6	0. 16. 25. 23	1. 0. 31, 3	6. 27. 45		2. 30, 1	
					22. 36		17, 3
Tu.	7	0. 17. 24. 20	1. 4. 10, 5	6. 50. 21		2. 12, 8	
					22. 29		17, 2
W.	8	0. 18. 23. 13	1. 7. 49, 9	7. 12. 50		1. 55, 6	
					22. 21		16, 9
Th.	9	0. 19. 22. 4	1. 11. 29, 5	7. 35. 11		1. 38, 7	
					22. 14		16, 7
F.	10	0. 20. 20. 53	1. 15. 9, 3	7. 57. 25		1. 22, 0	
					22. 5		16, 4
Sa.	11	0. 21. 19. 40	1. 18. 49, 4	8. 19. 30		1. 5, 6	
					21. 57		16, 1
Sun.	12	0. 22. 18. 24	1. 22. 29, 8	8. 41. 27		0. 49, 5	
					21. 48		15, 9
M.	13	0. 23. 17. 6	1. 26. 10, 4	9. 3. 15		0. 33, 6	
					21. 40		15, 5
Tu.	14	0. 24. 15. 46	1. 29. 51, 4	9. 24. 55		0. 18, 1	
					21. 29		15, 3
W.	15	0. 25. 14. 23	1. 33. 32, 6	9. 46. 24		0. 2, 8	
							14, 9
					21. 20	*Subtr.*	
Th.	16	0. 26. 12. 59	1. 37. 14, 3	10. 7. 44		0. 12, 1	
					21. 10		14, 5
F.	17	0. 27. 11. 32	1. 40. 56, 2	10. 28. 54		0. 26, 6	
					21. 0		14, 2
Sa.	18	0. 28. 10. 4	1. 44. 38, 6	10. 49. 54		0. 40, 8	
					20. 49		13, 7
Sun.	19	0. 29. 8. 33	1. 48. 21, 3	11. 10. 43		0. 54, 5	
					20. 38		13, 4
M.	20	1. 0. 7. 1	1. 52. 4, 5	11. 31. 21		1. 7, 9	
					20. 27		12, 9
Tu.	21	1. 1. 5. 27	1. 55. 48, 1	11. 51. 48		1. 20, 8	
					20. 15		12, 5
W.	22	1. 2. 3. 51	1. 59. 32, 1	12. 12. 3		1. 33, 3	
					20. 3		12, 0
Th.	23	1. 3. 2. 13	2. 3. 16, 6	12. 32. 6		1. 45, 3	
					19. 51		11, 6
F.	24	1. 4. 0. 34	2. 7. 1, 6	12. 51. 57		1. 56, 9	
					19. 38		11, 1
Sa.	25	1. 4. 58. 54	2. 10. 47, 0	13. 11. 35		2. 8, 0	
					19. 26		10, 5
Sun.	26	1. 5. 57. 11	2. 14. 33, 0	13. 31. 1		2. 18, 5	
					19. 12		10, 0
M.	27	1. 6. 55. 28	2. 18. 19, 5	13. 50. 13		2. 28, 5	
					18. 59		9, 5
Tu.	28	1. 7. 53. 43	2. 22. 6, 5	14. 9. 12		2. 38, 0	
					18. 46		9, 0
W.	29	1. 8. 51. 57	2. 25. 54, 1	14. 27. 58		2. 47, 0	
					18. 31		8, 4
Th.	30	1. 9. 50. 9	2. 29. 42, 2	14. 46. 29		2. 55, 4	
					18. 16		7, 9

Days	Time of ⊙'s Semidiam. passing Merid.	The SUN's Semi-diameter.	Hourly Motion.	Logar. Distance.	Place of the ☽'s Node.
	M. S.	M. S.	M. S.		S. D. M.
1	1. 4, 2	16. 1, 2	2. 27, 8	0. 000093	6. 7. 34
7	1. 4, 4	15. 59, 6	2. 27, 3	0. 000841	6. 7. 15
13	1. 4, 6	15. 57, 9	2. 26, 8	0. 001562	6. 6. 55
19	1. 4, 9	15. 56, 4	2. 26, 3	0. 002273	6. 6. 36
25	1. 5, 4	15. 54, 8	2. 25, 8	0. 002979	6. 6. 17

ECLIPSES of the SATELLITES of JUPITER.

MEAN TIME.

I. Satellite.		II. Satellite.		III. Satellite.		
Immersions.		*Immersions.*				
Days.	H. M. S.	Days.	H. M. S.	Days.	H. M. S.	
2	11. 13. 4	1	11. 39. 16	1	6. 59. 5	Im.
4	5. 41. 31	5	0. 55. 47	1	9. 19. 47	E.
6	0. 9. 53	* 8	14. 12. 20	8	10. 56. 34	Im.
7	18. 38. 20	12	3. 28. 50	* 8	13. 17. 52	E.
* 9	13. 6. 43	15	16. 45. 24	*15	14. 54. 0	Im.
11	7. 35. 10	19	6. 1. 58	15	17. 16. 1	E.
13	2. 3. 34	22	19. 18. 32	22	18. 51. 46	Im.
14	20. 32. 2	26	8. 35. 8	22	21. 14. 32	E.
*16	15. 0. 25	29	21. 51. 44	29	22. 49. 40	Im.
18	9. 28. 54			30	1. 13. 12	E.
20	3. 57. 19					
21	22. 25. 48					
23	16. 54. 14					
25	11. 22. 43			IV. Satellite.		
27	5. 51. 9					
29	0. 19. 41					
30	18. 48. 7					

Days	THE PLANETS' Heliocentric Long.	Lat.	Geocentric Long.	Lat.	Declin.	Rt. Asc. in Time.	Passage Merid.
	S. D. M.	D.M.	S. D. M.	D.M.	D. M.	H. M.	H. M.
	☿		*MERCURY.*				
1	8. 22. 53	4. 11 S	11. 14. 12	2. 2 S	8. 6S	23. 5	22. 24
4	9. 1. 14	4. 57	11. 17. 54	2. 17	6. 53	23. 19	22. 27
7	9. 9. 48	5. 38	11. 21. 54	2. 27	5. 28	23. 34	22. 32
10	9. 18. 40	6. 12	11. 26. 11	2. 33	3. 52	23. 50	22. 37
13	9. 27. 57	6. 39	0. 0. 43	2. 34	2. 4	0. 7	22. 43
16	10. 7. 46	6. 55	0. 5. 30	2. 31	0. 7S	0. 24	22. 49
19	10. 18. 16	7. 0	0. 10. 33	2. 22	2. 0N	0. 42	22. 57
22	10. 29. 35	6. 49	0. 15. 50	2. 9	4. 15	1. 2	23. 5
25	11. 11. 54	6. 19	0. 21. 22	1. 52	6. 37	1. 22	23. 14
28	11. 25. 23	5. 27	0. 27. 10	1. 30	9. 4	1. 43	23. 24
30	0. 5. 5	4. 38	1. 1. 10	1. 13	10. 45	1. 58	23. 32
	♀		*VENUS.*				
1	11. 10. 43	3. 23 S	11. 28. 36	1. 29 S	1. 55 S	23. 57	23. 16
7	11. 20. 14	3. 23	0. 6. 2	1. 28	1. 3N	0. 24	23. 21
13	11. 29. 46	3. 17	0. 13. 27	1. 24	4. 1	0. 52	23. 26
19	0. 9. 19	3. 6	0. 20. 51	1. 19	6. 56	1. 19	23. 32
25	0. 18. 53	2. 49	0. 28. 15	1. 12	9. 45	1. 47	23. 37
	♂		*MARS.*				
1	2. 21. 34	1. 1N	1. 25. 13	0. 45N	19. 49N	3. 31	2. 48
7	2. 24. 33	1. 6	1. 29. 15	0. 48	20. 47	3. 47	2. 43
13	2. 27. 30	1. 10	2. 3. 17	0. 50	21. 39	4. 4	2. 38
19	3. 0. 26	1. 15	2. 7. 17	0. 53	22. 24	4. 21	2. 33
25	3. 3. 20	1. 19	2. 11. 16	0. 55	23. 3	4. 38	2. 27
	♃		*JUPITER.*				
1	8. 5. 35	0. 43N	8. 15. 16	0. 48N	21. 51S	16. 56	16. 12
7	8. 6. 4	0. 43	8. 15. 12	0. 48	21. 50	16. 56	15. 49
13	8. 6. 32	0. 42	8. 15. 2	0. 48	21. 49	16. 55	15. 27
19	8. 7. 0	0. 42	8. 14. 45	0. 48	21. 47	16. 54	15. 3
25	8. 7. 29	0. 41	8. 14. 22	0. 48	21. 45	16. 53	14. 39
	♄		*SATURN.*			□ 17d. 13¾h.	
1	4. 3. 29	0. 29N	3. 27. 24	0. 30N	21. 12N	7. 58	7. 15
7	4. 3. 42	0. 30	3. 27. 28	0. 31	21. 11	7. 59	6. 53
13	4. 3. 56	0. 30	3. 27. 36	0. 31	21. 10	7. 59	6. 32
19	4. 4. 9	0. 31	3. 27. 48	0. 31	21. 8	8. 0	6. 11
25	4. 4. 22	0. 32	3. 28. 3	0. 31	21. 5	8. 1	5. 49
	♅		*GEORGIAN.*			□ 26d. 8½h.	
1	10. 3. 7	0. 36 S	10. 5. 45	0. 35 S	19. 25 S	20. 33	19. 48
11	10. 3. 13	0. 36	10. 6. 2	0. 35	19. 21	20. 34	19. 13
21	10. 3. 20	0. 36	10. 6. 14	0. 36	19. 18	20. 35	18. 36

Days of the Week.	Days of the Month.	The MOON's Longitude. Noon.	Longitude. Midnight.	Latitude. Noon.	Latitude. Midnight.
		S. D. M. S.	S. D. M. S.	D. M. S.	D. M. S.
W.	1	11. 7. 36. 43	11. 15. 4. 16	2. 38. 50 N	2. 1. 40 N
Th.	2	11. 22. 32. 52	0. 0. 1. 31	1. 22. 20	0. 41. 35 N
F.	3	0. 7. 29. 11	0. 14. 54. 50	0. 0. 13 N	0. 40. 58 S
Sa.	4	0. 22. 17. 29	0. 29. 36. 15	1. 21. 10 S	1. 59. 40
Sun.	5	1. 6. 50. 19	1. 13. 59. 3	2. 35. 48	3. 9. 2
M.	6	1. 21. 1. 56	1. 27. 58. 35	3. 38. 54	4. 5. 3
Tu.	7	2. 4. 48. 48	2. 11. 32. 32	4. 27. 16	4. 45. 25
W.	8	2. 18. 9. 52	2. 24. 40. 59	4. 59. 26	5. 9. 20
Th.	9	3. 1. 6. 11	3. 7. 25. 52	5. 15. 11	5. 17. 7
F.	10	3. 13. 40. 29	3. 19. 50. 33	5. 15. 15	5. 9. 44
Sa.	11	3. 25. 56. 36	4. 1. 59. 14	5. 0. 46	4. 48. 33
Sun.	12	4. 7. 59. 0	4. 13. 56. 31	4. 33. 17	4. 15. 8
M.	13	4. 19. 52. 20	4. 25. 47. 2	3. 54. 20	3. 31. 6
Tu.	14	5. 1. 41. 10	5. 7. 35. 15	3. 5. 40	2. 38. 15
W.	15	5. 13. 29. 47	5. 19. 25. 15	2. 9. 7	1. 38. 32
Th.	16	5. 25. 22. 2	6. 1. 20. 33	1. 6. 47	0. 34. 10 S
F.	17	6. 7. 21. 8	6. 13. 24. 5	0. 1. 0 S	0. 32. 22 N
Sa.	18	6. 19. 29. 40	6. 25. 38. 7	1. 5. 35 N	1. 38. 17
Sun.	19	7. 1. 49. 36	7. 8. 4. 15	2. 10. 4	2. 40. 33
M.	20	7. 14. 22. 10	7. 20. 43. 26	3. 9. 18	3. 35. 57
Tu.	21	7. 27. 8. 6	8. 3. 36. 12	4. 0. 7	4. 21. 25
W.	22	8. 10. 7. 45	8. 16. 42. 43	4. 39. 30	4. 54. 3
Th.	23	8. 23. 21. 7	9. 0. 2. 56	5. 4. 48	5. 11. 30
F.	24	9. 6. 48. 9	9. 13. 36. 42	5. 13. 57	5. 12. 1
Sa.	25	9. 20. 28. 35	9. 27. 23. 42	5. 5. 38	4. 54. 46
Sun.	26	10. 4. 22. 1	10. 11. 23. 23	4. 39. 29	4. 19. 55
M.	27	10. 18. 27. 42	10. 25. 34. 46	3. 56. 16	3. 28. 49
Tu.	28	11. 2. 44. 21	11. 9. 56. 9	2. 57. 56	2. 24. 7
W.	29	11. 17. 9. 48	11. 24. 24. 52	1. 47. 51	1. 9. 43 N
Th.	30	0. 1. 40. 50	0. 8. 57. 4	0. 30. 25 N	0. 9. 23 S

THE MOON's

Days of the Month.	Age.	Pass. Merid.	Right Ascension.		Declination.	
			Noon.	*Midnight.*	*Noon.*	*Midnight.*
	D.	H. M.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
1	28	22. 42	338. 18. 29	345. 28. 13	6. 15. 48 S	4. 0. 58 S
2	29	23. 37	352. 36. 54	359. 44. 50	1. 41. 57 S	0. 38. 45 N
3	1	ó	6. 52. 20	13. 59. 42	2. 58. 35 N	5. 15. 4
4	2	0. 32	21. 7. 6	28. 14. 34	7. 25. 46	9. 28. 30
5	3	1. 28	35. 21. 59	42. 29. 4	11. 21. 16	13. 2. 23
6	4	2. 24	49. 35. 16	56. 39. 53	14. 30. 30	15. 44. 36
7	5	3. 18	63. 42. 7	70. 41. 3	16. 43. 59	17. 28. 20
8	6	4. 11	77. 35. 48	84. 25. 30	17. 57. 36	18. 12. 2
9	7	5. 3	91. 9. 23	97. 46. 52	18. 12. 6	17. 58. 24
10	8	5. 54	104. 17. 35	110. 41. 18	17. 31. 43	16. 52. 55
11	9	6. 42	116. 58. 3	123. 8. 2	16. 2. 55	15. 2. 37
12	10	7. 28	129. 11. 39	135. 9. 27	13. 52. 58	12. 34. 55
13	11	8. 13	141. 2. 5	146. 50. 21	11. 9. 24	9. 37. 17
14	12	8. 56	152. 35. 8	158. 17. 20	7. 59. 29	6. 16. 52
15	13	9. 39	163. 57. 56	169. 37. 57	4. 30. 21	2. 40. 50 N
16	14	10. 22	175. 18. 24	181. 0. 18	0. 49. 15 N	1. 3. 25 S
17	15	11. 6	186. 44. 38	192. 32. 22	2. 56. 8 S	4. 47. 49
18	16	11. 51	198. 24. 28	204. 21. 46	6. 37. 21	8. 23. 30
19	17	12. 37	210. 25. 2	216. 34. 54	10. 5. 1	11. 40. 36
20	18	13. 26	222. 51. 48	229. 16. 4	13. 8. 54	14. 28. 33
21	19	14. 17	235. 47. 45	242. 26. 41	15. 38. 14	16. 36. 39
22	20	15. 10	249. 12. 28	256. 4. 24	17. 22. 37	17. 55. 4
23	21	16. 4	263. 1. 37	270. 3. 5	18. 13. 6	18. 16. 3
24	22	16. 59	277. 7. 36	284. 13. 59	18. 3. 31	17. 35. 18
25	23	17. 54	291. 21. 5	298. 27. 53	16. 51. 33	15. 52. 41
26	24	18. 49	305. 33. 34	312. 37. 33	14. 39. 23	13. 12. 36
27	25	19. 43	319. 39. 31	326. 39. 25	11. 33. 30	9. 43. 32
28	26	20. 37	333. 37. 26	340. 33. 57	7. 44. 16	5. 37. 28
29	27	21. 30	347. 29. 30	354. 24. 46	3. 25. 6 S	1. 9. 14 S
30	28	22. 24	1. 20. 24	8. 17. 1	1. 8. 2 N	3. 24. 27 N

Days of the Week.	Days of the Month.	The MOON's Semidiameter.		Hor. Parallax.		Proportional Logarithm.	
		Noon.	*Midnight.*	*Noon.*	*Midnight.*		
		M. S.	M. S.	M. S.	M. S.	*Noon.*	*Midn.*
W.	1	16. 34	16. 35	60. 47	60. 53	4715	4708
Th.	2	16. 36	16. 35	60. 55	60. 53	4705	4708
F.	3	16. 33	16. 31	60. 46	60. 35	4716	4729
Sa.	4	16. 26	16. 21	60. 20	60. 1	4747	4770
Sun.	5	16. 15	16. 8	59. 39	59. 14	4797	4827
M.	6	16. 1	15. 54	58. 48	58. 21	4859	4892
Tu.	7	15. 46	15. 39	57. 53	57. 25	4927	4962
W.	8	15. 31	15. 24	56. 57	56. 31	4998	5031
Th.	9	15. 18	15. 11	56. 7	55. 44	5062	5092
F.	10	15. 6	15. 1	55. 23	55. 5	5119	5143
Sa.	11	14. 56	14. 52	54. 49	54. 35	5164	5182
Sun.	12	14. 49	14. 47	54. 24	54. 16	5197	5207
M.	13	14. 46	14. 45	54. 10	54. 6	5215	5221
Tu.	14	14. 44	14. 44	54. 4	54. 4	5223	5223
W.	15	14. 45	14. 46	54. 7	54. 11	5219	5214
Th.	16	14. 47	14. 49	54. 16	54. 23	5207	5198
F.	17	14. 52	14. 54	54. 32	54. 42	5186	5173
Sa.	18	14. 57	15. 1	54. 53	55. 5	5158	5143
Sun.	19	15. 4	15. 7	55. 17	55. 30	5127	5110
M.	20	15. 11	15. 15	55. 44	55. 59	5092	5072
Tu.	21	15. 19	15. 23	56. 14	56. 29	5053	5034
W.	22	15. 27	15. 32	56. 44	57. 0	5014	4994
Th.	23	15. 36	15. 41	57. 16	57. 32	4974	4954
F.	24	15. 45	15. 49	57. 48	58. 4	4933	4913
Sa.	25	15. 54	15. 58	58. 20	58. 36	4894	4874
Sun.	26	16. 2	16. 6	58. 51	59. 6	4855	4837
M.	27	16. 10	16. 13	59. 20	59. 32	4820	4805
Tu.	28	16. 16	16. 19	59. 43	59. 53	4792	4780
W.	29	16. 21	16. 22	60. 0	60. 5	4771	4765
Th.	30	16. 23	16. 22	60. 6	60. 5	4764	4765

DISTANCES of the MOON'S *Centre* from the SUN, and from STARS *WEST* of her.

Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
The Sun.	6	- - -	- - -	- - -	39. 37. 36	41. 13. 44	42. 49. 26	44. 24. 43	45. 59. 34
	7	47. 34. 0	49. 8. 0	50. 41. 34	52. 14. 44	53. 47. 28	55. 19. 46	56. 51. 40	58. 23. 9
	8	59. 54. 14	61. 24. 54	62. 55. 11	64. 25. 5	65. 54. 35	67. 23. 42	68. 52. 27	70. 20. 51
	9	71. 48. 53	73. 16. 34	74. 43. 55	76. 10. 56	77. 37. 37	79. 3. 58	80. 30. 2	81. 55. 48
	10	83. 21. 17	84. 46. 29	86. 11. 25	87. 36. 6	89. 0. 31	90. 24. 41	91. 48. 38	93. 12. 22
	11	94. 35. 52	95. 59. 11	97. 22. 19	98. 45. 16	100. 8. 2	101. 30. 38	102. 53. 5	104. 15. 23
	12	105. 37. 33	106. 59. 36	108. 21. 32	109. 43. 22	111. 5. 6	112. 26. 44	113. 48. 18	115. 9. 48
	13	116. 31. 14	117. 52. 37	119. 13. 57	120. 35. 16	- - -	- - -	- - -	- - -
Aldebaran.	10	- - -	- - -	- - -	- - -	42. 15. 11	43. 46. 40	45. 17. 56	46. 49. 0
	11	48. 19. 49	49. 50. 26	51. 20. 53	52. 51. 9	54. 21. 14	55. 51. 9	57. 20. 56	58. 50. 34
	12	60. 20. 4	61. 49. 26	63. 18. 42	64. 47. 52	66. 16. 56	67. 45. 54	69. 14. 49	70. 43. 39
	13	72. 12. 25	73. 41. 8	75. 9. 49	76. 38. 28	78. 7. 5	- - -	- - -	- - -
Pollux.	13	- - -	- - -	- - -	- - -	36. 19. 24	37. 42. 46	39. 6. 26	40. 30. 23
	14	41. 54. 36	43. 19. 5	44. 43. 47	46. 8. 44	47. 33. 55	48. 59. 17	50. 24. 50	51. 50. 36
	15	53. 16. 33	54. 42. 41	56. 8. 59	57. 35. 28	59. 2. 8	60. 28. 57	61. 55. 57	63. 23. 7
	16	64. 50. 28	66. 17. 58	67. 45. 39	69. 13. 30	70. 41. 31	- - -	- - -	- - -
Regulus.	16	- - -	- - -	- - -	- - -	33. 53. 55	35. 23. 36	36. 53. 28	38. 23. 30
	17	39. 53. 44	41. 24. 8	42. 54. 43	44. 25. 29	45. 56. 26	47. 27. 33	48. 58. 51	50. 30. 21
	18	52. 2. 1	53. 33. 53	55. 5. 56	56. 38. 10	58. 10. 35	59. 43. 11	61. 15. 58	62. 48. 57
	19	64. 22. 7	65. 55. 28	67. 29. 1	69. 2. 45	70. 36. 41	72. 10. 48	73. 45. 6	75. 19. 36
	20	76. 54. 18	- - -	- - -	- - -	- - -	- - -	- - -	- - -

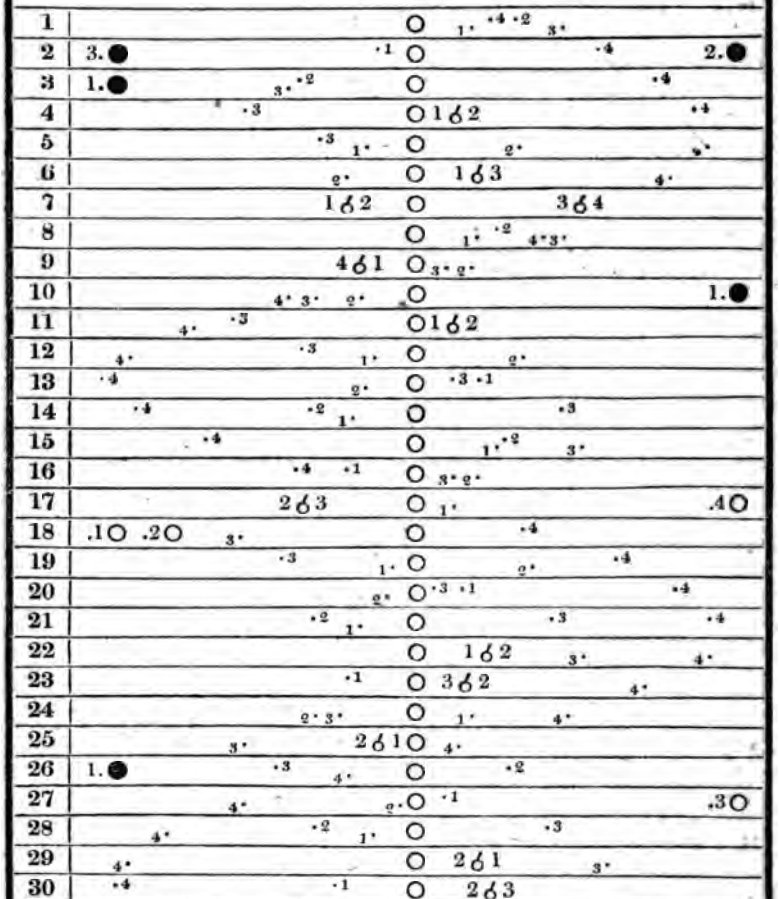
Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
Spica ♍.	20	23. 28. 41	25. 2. 52	26. 37. 19	28. 12. 2	29. 47. 1	31. 22. 15	32. 57. 44	34. 33. 27
	21	36. 9. 25	37. 45. 35	39. 21. 59	40. 58. 36	42. 35. 27	44. 12. 30	45. 49. 46	47. 27. 15
	22	49. 4. 57	50. 42. 50	52. 20. 56	53. 59. 14	55. 37. 45	57. 16. 28	58. 55. 24	60. 34. 32
	23	62. 13. 53	63. 53. 26	65. 33. 11	67. 13. 9	68. 53. 20	70. 33. 43	72. 14. 19	73. 55. 7
	24	75. 36. 8	77. 17. 21	78. 58. 47	80. 40. 26	82. 22. 17	- - -	- - -	- - -
Antares.	24	- - -	- - -	- - -	- - -	37. 28. 24	39. 7. 18	40. 46. 37	42. 26. 21
	25	44. 6. 27	45. 46. 56	47. 27. 46	49. 8. 57	50. 50. 29	52. 32. 19	54. 14. 27	55. 56. 54
	26	57. 39. 38	59. 22. 38	61. 5. 54	62. 49. 27	64. 33. 15	66. 17. 19	68. 1. 37	69. 46. 9
	27	71. 30. 56	73. 15. 56	75. 1. 9	76. 46. 35	78. 32. 14	80. 18. 6	82. 4. 9	83. 50. 23
	28	85. 36. 48	87. 23. 22	89. 10. 5	90. 56. 57	92. 43. 58	94. 31. 8	96. 18. 25	98. 5. 48
	29	99. 53. 19	101. 40. 55	103. 28. 35	105. 16. 19	107. 4. 7	- - -	- - -	- - -

DISTANCES of the MOON'S *Centre* from the SUN, and from STARS *WEST* of her.

Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
The Sun.	6	- - -	- - -	- - -	39. 37. 36	41. 13. 44	42. 49. 26	44. 24. 43	45. 59. 34
	7	47. 34. 0	49. 8. 0	50. 41. 34	52. 14. 44	53. 47. 28	55. 19. 46	56. 51. 40	58. 23. 9
	8	59. 54. 14	61. 24. 54	62. 55. 11	64. 25. 5	65. 54. 35	67. 23. 42	68. 52. 27	70. 20. 51
	9	71. 48. 53	73. 16. 34	74. 43. 55	76. 10. 56	77. 37. 37	79. 3. 58	80. 30. 2	81. 55. 48
	10	83. 21. 17	84. 46. 29	86. 11. 25	87. 36. 6	89. 0. 31	90. 24. 41	91. 48. 38	93. 12. 22
	11	94. 35. 52	95. 59. 11	97. 22. 19	98. 45. 16	100. 8. 2	101. 30. 38	102. 53. 5	104. 15. 23
	12	105. 37. 33	106. 59. 36	108. 21. 32	109. 43. 22	111. 5. 6	112. 26. 44	113. 48. 18	115. 9. 48
	13	116. 31. 14	117. 52. 37	119. 13. 57	120. 35. 16	- - -	- - -	- - -	- - -
Aldebaran.	10	- - -	- - -	- - -	- - -	42. 15. 11	43. 46. 40	45. 17. 56	46. 49. 0
	11	48. 19. 49	49. 50. 26	51. 20. 53	52. 51. 9	54. 21. 14	55. 51. 9	57. 20. 56	58. 50. 34
	12	60. 20. 4	61. 49. 26	63. 18. 42	64. 47. 52	66. 16. 56	67. 45. 54	69. 14. 49	70. 43. 39
	13	72. 12. 25	73. 41. 8	75. 9. 49	76. 38. 28	78. 7. 5	- - -	- - -	- - -
Pollux.	13	- - -	- - -	- - -	- - -	36. 19. 24	37. 42. 46	39. 6. 26	40. 30. 23
	14	41. 54. 36	43. 19. 5	44. 43. 47	46. 8. 44	47. 33. 55	48. 59. 17	50. 24. 50	51. 50. 36
	15	53. 16. 33	54. 42. 41	56. 8. 59	57. 35. 28	59. 2. 8	60. 28. 57	61. 55. 57	63. 23. 7
	16	64. 50. 28	66. 17. 58	67. 45. 39	69. 13. 30	70. 41. 31	- - -	- - -	- - -
Regulus.	16	- - -	- - -	- - -	- - -	33. 53. 55	35. 23. 36	36. 53. 28	38. 23. 30
	17	39. 53. 44	41. 24. 8	42. 54. 43	44. 25. 29	45. 56. 26	47. 27. 33	48. 58. 51	50. 30. 21
	18	52. 2. 1	53. 33. 53	55. 5. 56	56. 38. 10	58. 10. 35	59. 43. 11	61. 15. 58	62. 48. 57
	19	64. 22. 7	65. 55. 28	67. 29. 1	69. 2. 45	70. 36. 41	72. 10. 48	73. 45. 6	75. 19. 36
	20	76. 54. 18	- - -	- - -	- - -	- - -	- - -	- - -	- - -

Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
Spica m.	20	23. 28. 41	25. 2. 52	26. 37. 19	28. 12. 2	29. 47. 1	31. 22. 15	32. 57. 44	34. 33. 27
	21	36. 9. 25	37. 45. 35	39. 21. 59	40. 58. 36	42. 35. 27	44. 12. 30	45. 49. 46	47. 27. 15
	22	49. 4. 57	50. 42. 50	52. 20. 56	53. 59. 14	55. 37. 45	57. 16. 28	58. 55. 24	60. 34. 32
	23	62. 13. 53	63. 53. 26	65. 33. 11	67. 13. 9	68. 53. 20	70. 33. 43	72. 14. 19	73. 55. 7
	24	75. 36. 8	77. 17. 21	78. 58. 47	80. 40. 26	82. 22. 17	- - -	- - -	- - -
Antares.	24	- - -	- - -	- - -	- - -	37. 28. 24	39. 7. 18	40. 46. 37	42. 26. 21
	25	44. 6. 27	45. 46. 56	47. 27. 46	49. 8. 57	50. 50. 29	52. 32. 19	54. 14. 27	55. 56. 54
	26	57. 39. 38	59. 22. 38	61. 5. 54	62. 49. 27	64. 33. 15	66. 17. 19	68. 1. 37	69. 46. 9
	27	71. 30. 56	73. 15. 56	75. 1. 9	76. 46. 35	78. 32. 14	80. 18. 6	82. 4. 9	83. 50. 23
	28	85. 36. 48	87. 23. 22	89. 10. 5	90. 56. 57	92. 43. 58	94. 31. 8	96. 18. 25	98. 5. 48
	29	99. 53. 19	101. 40. 55	103. 28. 35	105. 16. 19	107. 4. 7	- - -	- - -	- - -

CONFIGURATIONS of the SATELLITES of JUPITER, at II o'Clock in the *Morning*.



Days of the Week.	Days of the Month.	*Sundays, and other remarkable Days.*
F.	1	*St. Philip and St. James.*
Sa.	2	
Sun.	3	*2d Sunday after Easter.* [Invent. of the Cross.
M.	4	Fr. East. in 15 days, 1 ret.
Tu.	5	
W.	6	East. T. beg. St. John
Th.	7	[Ev. ante Port. L.
F.	8	
Sa.	9	
Sun.	10	*3d Sunday after Easter.*
M.	11	From East. in 3 w. 2 ret.
Tu.	12	
W.	13	
Th.	14	
F.	15	
Sa.	16	
Sun.	17	*4th Sunday after Easter.*
M.	18	Fr. East. in 1 mo. 3 ret.
Tu.	19	Dunstan.
W.	20	
Th.	21	
F.	22	*Prs. of Homburg b.*
Sa.	23	
Sun.	24	*5th Su. aft. East. Rog. Sun.*
M.	25	From East. in 5 w. 4 ret.
Tu.	26	Aug. 1st Abp. of Cant.
W.	27	Ven. Bede.
Th.	28	*Ascens. D. Holy Thursday.*
F.	29	*K. Charles II. restored.*
Sa.	30	[On mor. of Asc. 5 ret.
Sun.	31	*Sunday aft. Ascens. Day.*

Phases of the MOON.

	D.	H.	M.
● New Moon	2.	19.	57
☽ *First Quarter* ...	10.	7.	36
○ Full Moon ...	18.	7.	48
☾ *Last Quarter* ...	25.	8.	19

Other *Phenomena.*

D.	H.	M.	
1.	2.	-	☽ ☌ ♓.
1.	15.	-	☽ ☍ ♓.
4.	0.	-	☿ ☌ ♀.
4.	9.	-	☽ 1 ☌ ♉.
4.	10.	-	☽ 2 ☌ ♉.
4.	15.	-	☽ ☌ ♉.
9.	14.	-	☽ 2 ☌ ♋.
10.	7.	-	☽ ☌ ☊.
10.	12.	-	☽ ☍ ☊.
10.	22.	-	☽ ☐ ☊.
11.	-	-	♅ Stationary.
12.	20.	-	☽ ☐ ☊.
14.	0.	-	☿ ☌ ♉.
15.	1.	-	☽ ☿ ♍.
16.	0.	-	♂ 132 ♉.
16.	9.	-	☽ ⚹ ♍.
16.	9.	-	☿ 2 ⚹ ♉.
17.	23.	-	☽ ☌ ♎.
18.	8.	-	☽ ☌ ♎.
19.	0.	-	☽ ☌ Oph.
20.	21.	31	☉ enters ♊.
23.	1.	-	☽ ☍ ♑.
25.	3.	-	☽ ☿ ♒.
26.	14.	-	☿ 132 ♉.
28.	9.	-	☽ ☌ ♓.
28.	23.	-	☽ ☍ ♓.

Days of the Week.	Days of the Month.	THE SUN's Longitude.	Rt. Ascen. *in Time.*	Declin. *North.*	Diff.	Equation of Time. *Sub. from app. Time.*	Diff.
		S. D. M. S.	H. M. S.	D. M. S.	M. S	M. S.	S.
F.	1	1. 10. 48. 19	2. 33. 30, 8	15. 4. 45	18. 2	3. 3, 3	7, 3
Sa.	2	1. 11. 46. 29	2. 37. 20, 1	15. 22. 47	17. 46	3. 10, 6	6, 8
Sun.	3	1. 12. 44. 37	2. 41. 9, 9	15. 40. 33	17. 31	3. 17, 4	6, 2
M.	4	1. 13. 42. 43	2. 45. 0, 2	15. 58. 4	17. 15	3. 23, 6	5, 7
Tu.	5	1. 14. 40. 47	2. 48. 51, 0	16. 15. 19	16. 59	3. 29, 3	5, 1
W.	6	1. 15. 38. 50	2. 52. 42, 4	16. 32. 18	16. 43	3. 34, 4	4, 6
Th.	7	1. 16. 36. 50	2. 56. 34, 4	16. 49. 1	16. 25	3. 39, 0	4, 0
F.	8	1. 17. 34. 49	3. 0. 27, 0	17. 5. 26	16. 9	3. 43, 0	3, 4
Sa.	9	1. 18. 32. 46	3. 4. 20, 0	17. 21. 35	15. 51	3. 46, 4	3, 0
Sun.	10	1. 19. 30. 41	3. 8. 13, 7	17. 37. 26	15. 33	3. 49, 4	2, 3
M.	11	1. 20. 28. 35	3. 12. 7, 9	17. 52. 59	15. 16	3. 51, 7	1, 8
Tu.	12	1. 21. 26. 26	3. 16. 2, 6	18. 8. 15	14. 57	3. 53, 5	1, 2
W.	13	1. 22. 24. 16	3. 19. 57, 9	18. 23. 12	14. 38	3. 54, 7	0, 7
Th.	14	1. 23. 22. 4	3. 23. 53, 8	18. 37. 50	14. 20	3. 55, 4	0, 2
F.	15	1. 24. 19. 51	3. 27. 50, 2	18. 52. 10	14. 0	3. 55, 6	0, 4
Sa.	16	1. 25. 17. 36	3. 31. 47, 2	19. 6. 10	13. 42	3. 55, 2	1, 0
Sun.	17	1. 26. 15. 19	3. 35. 44, 7	19. 19. 52	13. 21	3. 54, 2	1, 6
M.	18	1. 27. 13. 1	3. 39. 42, 8	19. 33. 13	13. 2	3. 52, 6	2, 1
Tu.	19	1. 28. 10. 41	3. 43. 41, 5	19. 46. 15	12. 42	3. 50, 5	2, 6
W.	20	1. 29. 8. 20	3. 47. 40, 7	19. 58. 57	12. 21	3. 47, 9	3, 2
Th.	21	2. 0. 5. 58	3. 51. 40, 4	20. 11. 18	12. 2	3. 44, 7	3, 8
F.	22	2. 1. 3. 36	3. 55. 40, 8	20. 23. 20	11. 39	3. 40, 9	4, 3
Sa.	23	2. 2. 1. 12	3. 59. 41, 6	20. 34. 59	11. 18	3. 36, 6	4, 8
Sun.	24	2. 2. 58. 47	4. 3. 43, 1	20. 46. 17	10. 58	3. 31, 8	5, 4
M.	25	2. 3. 56. 21	4. 7. 45, 0	20. 57. 15	10. 36	3. 26, 4	5, 9
Tu.	26	2. 4. 53. 55	4. 11. 47, 5	21. 7. 51	10. 14	3. 20, 5	6, 4
W.	27	2. 5. 51. 28	4. 15. 50, 5	21. 18. 5	9. 53	3. 14, 1	6, 9
Th.	28	2. 6. 49. 1	4. 19. 54, 0	21. 27. 58	9. 30	3. 7, 2	7, 4
F.	29	2. 7. 46. 32	4. 23. 57, 9	21. 37. 28	9. 8	2. 59, 8	7, 9
Sa.	30	2. 8. 44. 3	4. 28. 2, 4	21. 46. 36	8. 45	2. 51, 9	8, 3
Sun.	31	2. 9. 41. 32	4. 32. 7, 3	21. 55. 21	8. 22	2. 43, 6	8, 8

Days	Time of ⊙'s Semidiam. passing Merid.	THE SUN's Semi-diameter.	Hourly Motion.	Logar. Distance.	Place of the ☽'s Node.
	M. S.	M. S.	M. S.		S. D. M.
1	1. 5, 8	15. 53, 4	2. 25, 4	0. 003657	6. 5. 58
7	1. 6, 3	15. 52, 0	2. 25, 0	0. 004274	6. 5. 39
13	1. 6, 8	15. 50, 8	2. 24, 6	0. 004831	6. 5. 20
19	1. 7, 2	15. 49, 6	2. 24, 2	0. 005346	6. 5. 1
25	1. 7, 7	15. 48, 6	2. 23, 9	0. 005827	6. 4. 42

ECLIPSES OF THE SATELLITES OF JUPITER.

MEAN TIME.

I. Satellite. *Immersions.*		II. Satellite. *Immersions.*		III. Satellite.	
Days.	H. M. S.	Days.	H. M. S.	Days.	H. M. S.
* 2	13. 16. 39	* 3	11. 8. 23	7	2. 48. 20 Im.
4	7. 45. 6	7	0. 25. 5	● 7	5. 12. 37 E.
6	2. 13. 39	*10	13. 41. 49	14	6. 46. 35 Im.
7	20. 42. 7	14	2. 58. 34	●14	9. 11. 38 E.
* 9	15. 10. 40	17	16. 15. 22	*21	10. 45. 6 Im.
11	9. 39. 9	21	5. 32. 12	●21	13. 10. 52 E.
13	4. 7. 42	24	18. 49. 8	*28	14. 43. 16 Im.
14	22. 36. 13	28	8. 6. 3	●28	17. 9. 48 E.
16	17. 4. 48		*Emersion.*		
*18	11. 33. 19	31	23. 49. 34		
20	6. 1. 54				
22	0. 30. 26				
23	18. 59. 3				
*25	13. 27. 35				
27	7. 56. 12			IV. Satellite.	
29	2. 24. 45				
30	20. 53. 23				

Days	THE PLANETS' Heliocentric Long.	Heliocentric Lat.	Geocentric Long.	Geocentric Lat.	Declin.	Rt. Asc. *in Time.*	Passage Merid.
	S. D. M.	D. M.	S. D. M.	D. M.	D. M.	H. M.	H. M.
	☿		*MERCURY.*			Sup. ♂ 7d. 13¾h.	
1	0. 10. 9	4. 9 S	1. 3. 13	1. 5 S	11. 35 N	2. 5	23. 36
4	0. 26. 17	2. 24	1. 9. 29	0. 36	14. 6	2. 29	23. 48
7	1. 13. 41	0. 19 S	1. 15. 55	0. 5 S	16. 33	2. 54	24. 2
10	2. 2. 6	1. 55 N	1. 22. 27	0. 27 N	18. 50	3. 20	0. 11
13	2. 21. 0	4. 0	1. 28. 57	0. 57	20. 52	3. 46	0. 26
16	3. 9. 46	5. 38	2. 5. 19	1. 24	22. 35	4. 12	0. 41
19	3. 27. 45	6. 38	2. 11. 25	1. 46	23. 55	4. 38	0. 55
22	4. 14. 31	7. 0	2. 17. 9	2. 2	24. 52	5. 3	1. 8
25	4. 29. 52	6. 48	2. 22. 30	2. 11	25. 25	5. 27	1. 19
28	5. 13. 48	6. 13	2. 27. 25	2. 13	25. 39	5. 49	1. 29
31	5. 26. 27	5. 22	3. 1. 53	2. 7	25. 34	6. 8	1. 36
	♀		*VENUS.*			Sup. ♂ 20d. 8¼h.	
1	0. 28. 28	2. 28 S	1. 5. 39	1. 2 S	12. 26 N	2. 15	23. 42
7	1. 8. 4	2. 3	1. 13. 3	0. 51	14. 57	2. 43	23. 48
13	1. 17. 41	1. 34	1. 20. 26	0. 39	17. 15	3. 13	23. 54
19	1. 27. 19	1. 2	1. 27. 49	0. 26	19. 16	3. 43	0. 0
25	2. 6. 58	0. 29 S	2. 5. 12	0. 12 S	20. 59	4. 13	0. 5
	♂		*MARS.*				
1	3. 6. 13	1. 22 N	2. 15. 14	0. 57 N	23. 35 N	4. 55	2. 22
7	3. 9. 5	1. 26	2. 19. 12	0. 58	23. 59	5. 13	2. 16
13	3. 11. 56	1. 29	2. 23. 8	1. 0	24. 17	5. 30	2. 10
19	3. 14. 43	1. 33	2. 27. 3	1. 2	24. 27	5. 47	2. 3
25	3. 17. 31	1. 35	3. 0. 58	1. 3	24. 30	6. 4	1. 56
	♃		*JUPITER.*			☌ 31d. 17¼h.	
1	8. 7. 57	0. 40 N	8. 13. 53	0. 48 N	21. 41 S	16. 50	14. 14
7	8. 8. 26	0. 40	8. 13. 19	0. 48	21. 37	16. 48	13. 49
13	8. 8. 54	0. 39	8. 12. 41	0. 48	21. 33	16. 45	13. 23
19	8. 9. 23	0. 39	8. 11. 59	0. 48	21. 28	16. 42	12. 56
25	8. 9. 51	0. 38	8. 11. 14	0. 47	21. 22	16. 39	12. 29
	♄		*SATURN.*				
1	4. 4. 35	0. 32 N	3. 28. 22	0. 32 N	21. 1 N	8. 2	5. 28
7	4. 4. 49	0. 33	3. 28. 45	0. 32	20. 57	8. 4	5. 7
13	4. 5. 2	0. 33	3. 29. 10	0. 32	20. 52	8. 6	4. 45
19	4. 5. 15	0. 34	3. 29. 38	0. 32	20. 46	8. 8	4. 23
25	4. 5. 28	0. 34	4. 0. 9	0. 33	20. 40	8. 10	4. 2
	♅		*GEORGIAN.*				
1	10. 3. 27	1. 36 S	10. 6. 21	0. 36 S	19. 17 S	20. 36	17. 59
11	10. 3. 33	1. 36	10. 6. 23	0. 36	19. 17	20. 36	17. 21
21	10. 3. 40	1. 36	10. 6. 21	0. 37	19. 18	20. 36	16. 41

Days of the Week.	Days of the Month.	The MOON's Longitude. *Noon.*	*Midnight.*	Latitude. *Noon.*	*Midnight.*
		S. D. M. S.	S. D. M. S.	D. M. S.	D. M. S.
F.	1	0. 16. 12. 57	0. 23. 27. 49	0. 48. 58 S	1. 27. 37 S
Sa.	2	1. 0. 40. 52	1. 7. 51. 25	2. 4. 40	2. 39. 30
Sun.	3	1. 14. 58. 47	1. 22. 2. 18	3. 11. 31	3. 40. 16
M.	4	1. 29. 1. 23	2. 5. 55. 31	4. 5. 22	4. 26. 33
Tu.	5	2. 12. 44. 20	2. 19. 27. 36	4. 43. 40	4. 56. 32
W.	6	2. 26. 5. 11	3. 2. 37. 3	5. 5. 16	5. 9. 51
Th.	7	3. 9. 3. 20	3. 15. 24. 13	5. 10. 27	5. 7. 10
F.	8	3. 21. 40. 4	3. 27. 51. 16	5. 0. 14	4. 49. 53
Sa.	9	4. 3. 58. 19	4. 10. 1. 43	4. 36. 18	4. 19. 46
Sun.	10	4. 16. 2. 5	4. 22. 0. 0	4. 0. 28	3. 38. 42
M.	11	4. 27. 56. 7	5. 3. 51. 3	3. 14. 40	2. 48. 38
Tu.	12	5. 9. 45. 27	5. 15. 39. 59	2. 20. 50	1. 51. 32
W.	13	5. 21. 35. 16	5. 27. 31. 51	1. 20. 59	0. 49. 28 S
Th.	14	6. 3. 30. 21	6. 9. 31. 15	0. 17. 15 S	0. 15. 20 N
F.	15	6. 15. 35. 4	6. 21. 42. 12	0. 47. 58 N	1. 20. 18
Sa.	16	6. 27. 53. 0	7. 4. 7. 46	1. 51. 59	2. 22. 37
Sun.	17	7. 10. 26. 43	7. 16. 49. 56	2. 51. 48	3. 19. 7
M.	18	7. 23. 17. 29	7. 29. 49. 21	3. 44. 10	4. 6. 32
Tu.	19	8. 6. 25. 24	8. 13. 5. 27	4. 25. 50	4. 41. 41
W.	20	8. 19. 49. 15	8. 26. 36. 30	4. 53. 47	5. 1. 52
Th.	21	9. 3. 26. 54	9. 10. 20. 5	5. 5. 42	5. 5. 8
F.	22	9. 17. 15. 40	9. 24. 13. 19	5. 0. 7	4. 50. 39
Sa.	23	10. 1. 12. 42	10. 8. 13. 33	4. 36. 48	4. 18. 45
Sun.	24	10. 15. 15. 33	10. 22. 18. 27	3. 56. 44	3. 31. 4
M.	25	10. 29. 22. 6	11. 6. 26. 17	3. 2. 8	2. 30. 21
Tu.	26	11. 13. 30. 52	11. 20. 35. 40	1. 56. 14	1. 20. 18
W.	27	11. 27. 40. 34	0. 4. 45. 21	0. 43. 8 N	0. 5. 20 N
Th.	28	0. 11. 49. 51	0. 18. 53. 46	0. 32. 30 S	1. 9. 45 S
F.	29	0. 25. 56. 50	1. 2. 58. 43	1. 45. 49	2. 20. 7
Sa.	30	1. 9. 59. 0	1. 16. 57. 18	2. 52. 7	3. 21. 21
Sun.	31	1. 23. 53. 8	2. 0. 46. 6	3. 47. 23	4. 9. 53

Days of the Month.	Age.	Pass. Merid.	THE MOON's Right Ascension.		Declination.	
			Noon.	*Midnight.*	*Noon.*	*Midnight.*
D.	D.	H. M.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
1	29	23. 18	15. 15. 12	22. 15. 23	5. 37. 46 N	7. 45. 47 N
2	1	ó	29. 17. 43	36. 22. 10	9. 46. 22	11. 37. 29
3	2	0. 13	43. 28. 24	50. 35. 49	13. 17. 24	14. 44. 35
4	3	1. 8	57. 43. 32	64. 50. 25	15. 57. 49	16. 56. 12
5	4	2. 3	71. 55. 15	78. 56. 44	17. 39. 14	18. 6. 46
6	5	2. 57	85. 53. 36	92. 44. 43	18. 18. 57	18. 16. 12
7	6	3. 49	99. 29. 9	106. 6. 12	17. 59. 14	17. 28. 55
8	7	4. 39	112. 35. 29	118. 56. 53	16. 46. 14	15. 52. 13
9	8	5. 26	125. 10. 34	131. 16. 56	14. 47. 56	13. 34. 28
10	9	6. 12	137. 16. 34	143. 10. 15	12. 12. 53	10. 44. 8
11	10	6. 56	148. 58. 54	154. 43. 32	9. 9. 13	7. 29. 3
12	11	7. 39	160. 25. 14	166. 5. 10	5. 44. 32	3. 56. 31
13	12	8. 21	171. 44. 30	177. 24. 25	2. 5. 54 N	0. 13. 35 N
14	13	9. 4	183. 6. 9	188. 50. 51	1. 39. 32 S	3. 32. 26 S
15	14	9. 49	194. 39. 41	200. 33. 45	5. 24. 7	7. 13. 27
16	15	10. 35	206. 34. 1	212. 41. 24	8. 59. 11	10. 40. 5
17	16	11. 23	218. 56. 35	225. 20. 1	12. 14. 45	13. 41. 44
18	17	12. 13	231. 52. 0	238. 32 28	14. 59. 34	16. 6. 47
19	18	13. 6	245. 21. 0	252. 16. 55	17. 1. 56	17. 43. 47
20	19	14. 1	259. 19. 9	266. 26. 22	18. 11. 10	18. 23. 10
21	20	14. 56	273. 37. 6	280. 49. 43	18. 19. 15	17. 59. 9
22	21	15. 52	288. 2. 37	295. 14. 22	17. 22. 54	16. 30. 58
23	22	16. 47	302. 23. 45	309. 29. 54	15. 24. 7	14. 3. 22
24	23	17. 40	316. 32. 13	323. 30. 30	12. 29. 59	10. 45. 28
25	24	18. 33	330. 24. 53	337. 15. 48	8. 51. 26	6. 49. 38
26	25	19. 25	344. 3. 53	350. 49. 57	4. 41. 51	2. 29. 59 S
27	26	20. 17	357. 34. 55	4. 19. 45	0. 15. 55 S	1. 58. 23 N
28	27	21. 9	11. 5. 23	17. 52. 37	4. 10. 59 N	6. 19. 55
29	28	22. 2	24. 42. 10	31. 34. 29	8. 23. 16	10. 19. 9
30	29	22. 55	38. 29. 46	45. 27. 56	12. 5. 51	13. 41. 39
31	30	23. 50	52. 28. 31	59. 30. 51	15. 5. 8	16. 15. 7

Days of the Week.	Days of the Month.	THE MOON'S Semidiameter.		Hor. Parallax.		Proportional Logarithm.	
		Noon.	*Midnight.*	*Noon.*	*Midnight.*		
		M. S.	M. S.	M. S.	M. S.	*Noon.*	*Midn.*
F.	1	16. 21	16. 19	60. 0	59. 52	4771	4781
Sa.	2	16. 16	16. 12	59. 41	59. 27	4794	4811
Sun.	3	16. 7	16. 2	59. 10	58. 51	4832	4855
M.	4	15. 56	15. 50	58. 30	58. 7	4881	4910
Tu.	5	15. 44	15. 37	57. 43	57. 19	4940	4970
W.	6	15. 30	15. 24	56. 54	56. 31	5002	5031
Th.	7	15. 18	15. 12	56. 8	55. 46	5061	5089
F.	8	15. 6	15. 1	55. 26	55. 8	5115	5139
Sa.	9	14. 57	14. 54	54. 53	54. 40	5158	5175
Sun.	10	14. 51	14. 48	54. 29	54. 20	5190	5202
M.	11	14. 47	14. 46	54. 15	54. 12	5209	5213
Tu.	12	14. 46	14. 46	54. 11	54. 13	5214	5211
W.	13	14. 48	14. 49	54. 17	54. 23	5206	5198
Th.	14	14. 51	14. 54	54. 31	54. 42	5187	5173
F.	15	14. 58	15. 1	54. 54	55. 7	5157	5140
Sa.	16	15. 5	15. 9	55. 21	55. 37	5122	5101
Sun.	17	15. 14	15. 18	55. 53	56. 9	5080	5059
M.	18	15. 23	15. 27	56. 26	56. 43	5037	5016
Tu.	19	15. 32	15. 36	57. 0	57. 16	4994	4974
W.	20	15. 40	15. 44	57. 31	57. 46	4955	4936
Th.	21	15. 48	15. 52	58. 0	58. 13	4918	4902
F.	22	15. 55	15. 58	58. 25	58. 35	4887	4875
Sa.	23	16. 1	16. 3	58. 45	58. 53	4863	4853
Sun.	24	16. 5	16. 7	59. 1	59. 7	4843	4836
M.	25	16. 8	16. 9	59. 12	59. 16	4830	4825
Tu.	26	16. 10	16. 10	59. 19	59. 21	4821	4819
W.	27	16. 10	16. 10	59. 21	59. 20	4819	4820
Th.	28	16. 9	16. 8	59. 17	59. 12	4823	4830
F.	29	16. 6	16. 4	59. 5	58. 57	4838	4848
Sa.	30	16. 1	15. 58	58. 47	58. 34	4860	4876
Sun.	31	15. 54	15. 49	58. 20	58. 4	4894	4913

DISTANCES of the MOON's *Centre* from the SUN, and from STARS *EAST* of her.

Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
Regulus.	6	61. 32. 31	59. 54. 41	58. 17. 12	56. 40. 5	55. 3. 21	53. 26. 58	51. 50. 57	50. 15. 17
	7	48. 39. 58	47. 5. 1	45. 30. 24	43. 56. 8	42. 22. 12	40. 48. 36	39. 15. 19	37. 42. 22
	8	36. 9. 45	34. 37. 27	33. 5. 28	31. 33. 47	30. 2. 26	- - -	- - -	- - -
Spica ♍.	8	- - -	- - -	- - -	- - -	83. 27. 50	81. 56. 8	80. 24. 40	78. 53. 26
	9	77. 22. 26	75. 51. 38	74. 21. 3	72. 50. 39	71. 20. 26	69. 50. 24	68. 20. 31	66. 50. 47
	10	65. 21. 13	63. 51. 47	62. 22. 29	60. 53. 17	59. 24. 13	57. 55. 14	56. 26. 21	54. 57. 32
	11	53. 28. 49	52. 0. 9	50. 31. 32	49. 2. 58	47. 34. 27	46. 5. 57	44. 37. 29	43. 9. 1
	12	41. 40. 34	40. 12. 6	38. 43. 38	37. 15. 8	35. 46. 38	34. 18. 6	32. 49. 32	31. 20. 55
	13	29. 52. 16	- - -	- - -	- - -	- - -	- - -	- - -	- - -
Antares.	13	75. 44. 9	74. 16. 2	72. 47. 49	71. 19. 31	69. 51. 8	68. 22. 38	66. 54. 2	65. 25. 20
	14	63. 56. 31	62. 27. 35	60. 58. 32	59. 29. 22	58. 0. 4	56. 30. 38	55. 1. 4	53. 31. 23
	15	52. 1. 35	50. 31. 39	49. 1. 36	47. 31. 27	46. 1. 11	44. 30. 47	43. 0. 19	41. 29. 47
	16	39. 59. 11	38. 28. 29	36. 57. 49	35. 27. 9	33. 56. 31	32. 25. 58	30. 55. 32	29. 25. 14
	17	27. 55. 6	- - -	- - -	- - -	- - -	- - -	- - -	- - -
α Aquilæ.	17	78. 56. 46	77. 30. 18	76. 3. 41	74. 36. 58	73. 10. 10	71. 43. 17	70. 16. 22	68. 49. 26
	18	67. 22. 29	65. 55. 32	64. 28. 37	63. 1. 48	61. 35. 4	60. 8. 28	58. 42. 3	57. 15. 49
	19	55. 49. 48	- - -	- - -	- - -	- - -	- - -	- - -	- - -

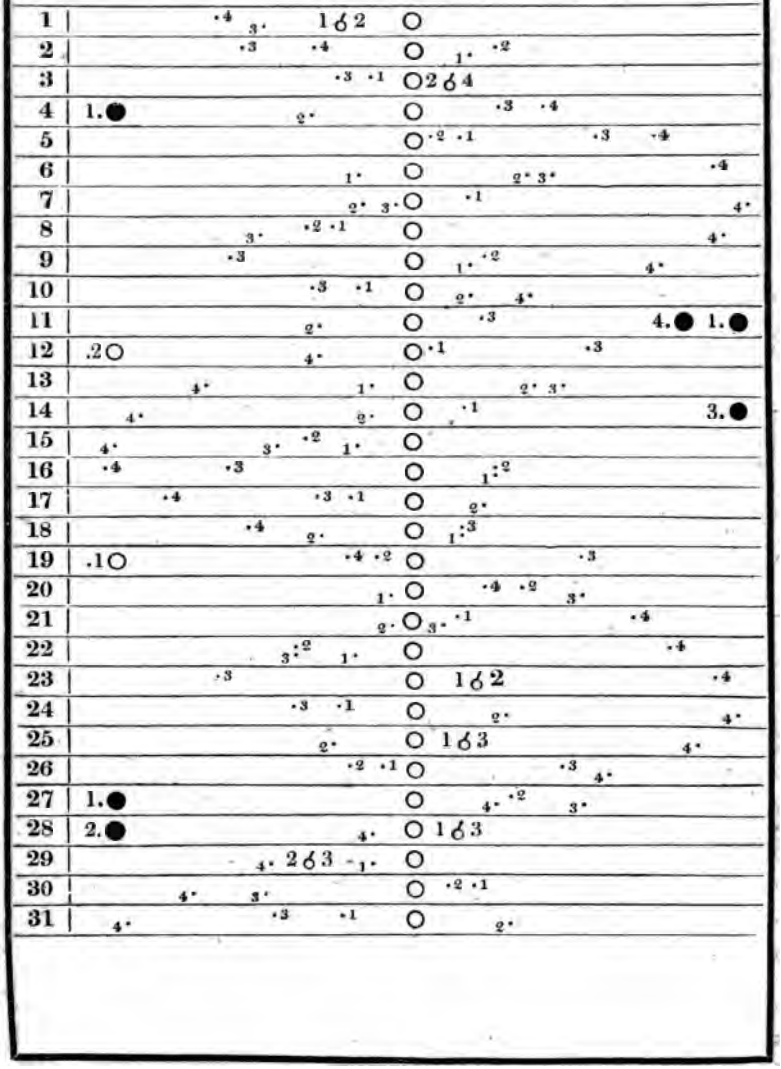
Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
Fomalhaut.	19	86. 58. 46	85. 27. 57	83. 56. 57	82. 25. 48	80. 54. 31	79. 23. 6	77. 51. 36	76. 20. 1
	20	74. 48. 22	73. 16. 39	71. 44. 57	70. 13. 15	68. 41. 34	67. 9. 56	65. 38. 22	64. 6. 56
	21	62. 35. 39	61. 4. 30	59. 33. 37	58. 3. 0	56. 32. 39	55. 2. 38	53. 33. 2	52. 3. 55
	22	50. 35. 20	49. 7. 21	47. 40. 2	46. 13. 26	44. 47. 38	- - -	- - -	- - -
α Pegasi.	22	- - -	- - -	- - -	- - -	57. 12. 54	55. 36. 4	53. 59. 23	52. 22. 54
	23	50. 46. 40	49. 10. 46	47. 35. 14	46. 0. 11	44. 25. 36	42. 51. 36	41. 18. 15	39. 45. 35
	24	38. 13. 40	- - -	- - -	- - -	- - -	- - -	- - -	- - -
α Arietis.	24	79. 29. 44	77. 46. 44	76. 3. 42	74. 20. 38	72. 37. 31	70. 54. 23	69. 11. 15	67. 28. 8
	25	65. 45. 1	64. 1. 56	62. 18. 53	60. 35. 53	58. 52. 57	- - -	- - -	- - -
The Sun.	23	120. 41. 52	119. 4. 34	117. 27. 10	115. 49. 40	114. 12. 3	112. 34. 20	110. 56. 32	109. 18. 38
	24	107. 40. 38	106. 2. 33	104. 24. 24	102. 46. 9	101. 7. 50	99. 29. 27	97. 50. 59	96. 12. 27
	25	94. 33. 52	92. 55. 13	91. 16. 31	89. 37. 46	87. 58. 58	86. 20. 7	84. 41. 14	83. 2. 19
	26	81. 23. 21	79. 44. 22	78. 5. 21	76. 26. 20	74. 47. 17	73. 8. 13	71. 29. 8	69. 50. 4
	27	68. 11. 0	66. 31. 56	64. 52. 54	63. 13. 53	61. 34. 54	59. 55. 55	58. 16. 59	56. 38. 6
	28	54. 59. 16	53. 20. 29	51. 41. 47	50. 3. 10	48. 24. 38	46. 46. 10	45. 7. 50	43. 29. 37
	29	41. 51. 31	40. 13. 33	- - -	- - -	- - -	- - -	- - -	- - -

DISTANCES of the Moon's *Centre* from the Sun, and from Stars *WEST* of her.

Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
The Sun.	6	40. 42. 12	42. 12. 46	43. 43. 0	45. 12. 54	46. 42. 26	48. 11. 38	49. 40. 30	51. 9. 3
	7	52. 37. 15	54. 5. 7	55. 32. 41	56. 59. 56	58. 26. 51	59. 53. 28	61. 19. 49	62. 45. 52
	8	64. 11. 37	65. 37. 5	67. 2. 18	68. 27. 16	69. 51. 58	71. 16. 25	72. 40. 39	74. 4. 40
	9	75. 28. 26	76. 52. 0	78. 15. 22	79. 38. 34	81. 1. 33	82. 24. 22	83. 47. 2	85. 9. 34
	10	86. 31. 55	87. 54. 8	89. 16. 15	90. 38. 15	92. 0. 7	93. 21. 54	94. 43. 37	96. 5. 16
	11	97. 26. 49	98. 48. 19	100. 9. 47	101. 31. 13	102. 52. 36	104. 13. 58	105. 35. 20	106. 56. 42
	12	108. 18. 4	109. 39. 27	111. 0. 53	112. 22. 20	113. 43. 50	115. 5. 23	116. 27. 0	117. 48. 42
	13	119. 10. 28	- - -	- - -	- - -	- - -	- - -	- - -	- - -
Pollux.	10	- - -	- - -	- - -	- - -	32. 45. 22	34. 8. 21	35. 31. 39	36. 55. 16
	11	38. 19. 9	39. 43. 18	41. 7. 43	42. 32. 21	43. 57. 11	45. 22. 11	46. 47. 22	48. 12. 44
	12	49. 38. 16	51. 3. 57	52. 29. 47	53. 55. 47	55. 21. 57	56. 48. 16	58. 14. 44	59. 41. 21
	13	61. 8. 8	62. 35. 4	64. 2. 9	65. 29. 25	66. 56. 50	68. 24. 26	69. 52. 12	71. 20. 9
	14	72. 48. 17	74. 16. 36	75. 45. 6	77. 13. 47	78. 42. 39	- - -	- - -	- - -
Regulus.	14	- - -	- - -	- - -	- - -	42. 3. 48	43. 34. 24	45. 5. 14	46. 36. 16
	15	48. 7. 31	49. 38. 59	51. 10. 41	52. 42. 36	54. 14. 44	55. 47. 6	57. 19. 42	58. 52. 33
	16	60. 25. 38	61. 58. 58	63. 32. 32	65. 6. 21	66. 40. 25	68. 14. 44	69. 49. 18	71. 24. 7
	17	72. 59. 11	74. 34. 30	76. 10. 5	77. 45. 54	79. 21. 59	80. 58. 18	82. 34. 53	84. 11. 43
	18	85. 48. 47	- - -	- - -	- - -	- - -	- - -	- - -	- - -

Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
Spica ♍.	18	32. 19. 49	33. 56. 47	35. 34. 3	37. 11. 35	38. 49. 24	40. 27. 29	42. 5. 50	43. 44. 26
	19	45. 23. 18	47. 2. 24	48. 41. 45	50. 21. 21	52. 1. 10	53. 41. 13	55. 21. 29	57. 1. 59
	20	58. 42. 42	60. 23. 37	62. 4. 45	63. 46. 4	65. 27. 36	67. 9. 19	68. 51. 13	70. 33. 19
	21	72. 15. 35	73. 58. 2	75. 40. 39	77. 23. 25	79. 6. 22	- - -	- - -	- - -
Antares.	21	- - -	- - -	- - -	- - -	34. 17. 26	35. 56. 50	37. 36. 39	39. 16. 52
	22	40. 57. 27	42. 38. 23	44. 19. 38	46. 1. 10	47. 43. 0	49. 25. 3	51. 7. 21	52. 49. 52
	23	54. 32. 35	56. 15. 29	57. 58. 35	59. 41. 50	61. 25. 16	63. 8. 50	64. 52. 32	66. 36. 22
	24	68. 20. 20	70. 4. 25	71. 48. 36	73. 32. 54	75. 17. 18	77. 1. 48	78. 46. 22	80. 31. 2
	25	82. 15. 46	84. 0. 34	85. 45. 26	87. 30. 21	89. 15. 20	91. 0. 22	92. 45. 26	94. 30. 32
	26	96. 15. 40	98. 0. 49	99. 45. 59	101. 31. 10	103. 16. 21	- - -	- - -	- - -
α Aquilæ.	26	- - -	- - -	- - -	- - -	56. 7. 23	57. 39. 54	59. 12. 55	60. 46. 23
	27	62. 20. 16	63. 54. 33	65. 29. 9	67. 4. 5	68. 39. 19	70. 14. 47	71. 50. 26	73. 26. 16
	28	75. 2. 18	76. 38. 26	78. 14. 39	79. 50. 56	81. 27. 18	83. 3. 41	84. 40. 4	86. 16. 26
	29	87. 52. 45	- - -	- - -	- - -	- - -	- - -	- - -	- - -

CONFIGURATIONS of the SATELLITES of JUPITER,
At X o'Clock in the *Evening*.



Days of the Week.	Days of the Month.	*Sundays, and other remarkable Days.*
M.	1	Easter T. ends. Nicom.
Tu.	2	
W.	3	
Th.	4	Camb. Term div. n.
F.	5	Boniface. *D. of Cumb. b.*
Sa.	6	Oxford Term ends.
Sun.	7	*Whit-Sunday.*
M.	8	*Whit-Monday.*
Tu.	9	*Whit-Tuesday.*
W.	10	Oxford Term begins.
Th.	11	*St. Barnabas.*
F.	12	
Sa.	13	
Sun.	14	*Trinity Sunday.*
M.	15	On mor. of H. Tr. 1 ret.
Tu.	16	
W.	17	St. Alban.
Th.	18	
F.	19	Trinity Term begins.
Sa.	20	Tra. of Ed. K. of W. Sax.
Sun.	21	*1st Sunday after Trinity.*
M.	22	In 8 days of H. Tr. 2 ret.
Tu.	23	
W.	24	*Nativity of St. John Bapt.*
Th.	25	
F.	26	
Sa.	27	
Sun.	28	*2d Sunday after Trinity.*
M.	29	*St. Peter.* In 15 d. of H.
Tu.	30	[Tr. 3 ret.

Phases of the MOON.

	D.	H.	M.
● New Moon . . .	1.	5.	49
☽ *First Quarter* . .	9.	1.	23
○ Full Moon	16.	18.	15
☾ *Last Quarter* . .	23.	12.	57
● New Moon	30.	16.	45

Other *Phenomena.*

D.	H.	M.	
4.	8.	-	♂ ☌ ♊.
4.	12.	-	☿ ☌ ♊.
4.	17.	-	☿ ☌ ♂.
5.	22.	-	☽ 2 ☌ ♋.
6.	15.	-	☽ ☍ ☊.
6.	20.	-	☽ ☌ ☊.
7.	5.	-	☽ ☌ ☊.
9.	4.	-	☽ ☍ ☊.
10.	2.	-	♀ 132 ♉.
11.	9.	-	☽ ☍ ♏.
12.	17.	-	☽ ☌ ♏.
13.	20.	-	☿ ☌ ♊.
14.	8.	-	☽ ☍ ♎.
14.	16.	-	☽ ☍ ♎.
15.	8.	-	☽ ☌ Oph.
17.	5.	-	♂ ☌ ♊.
19.	7.	-	☽ ☌ ♑.
20.	9.	-	♀ ☌ ♊.
21.	6.	8	☉ enters ♋.
21.	8.	-	☽ ☍ ♒.
22.	-	-	☿ Stationary.
24.	14.	-	☽ ☍ ♐.
25.	5.	-	☽ ☌ ♐.
27.	6.	-	♀ ☌ ♊.
28.	1.	-	☽ 1 ☌ ♉.
28.	2.	-	☽ 2 ☌ ♉.
28.	7.	-	☽ ☌ ♉.

Days of the Week.	Days of the Month.	The SUN's Longitude.	Rt. Ascen. *in Time.*	Declin. *North.*	Diff.	Equation of Time. *Sub. from app. Time.*	Diff.
		S. D. M. S.	H. M. S.	D. M. S.	M. S.	M. S.	S.
M.	1	2. 10. 39. 1	4. 36. 12, 6	22. 3. 43		2. 34, 8	
					7. 59		9, 1
Tu.	2	2. 11. 36. 29	4. 40. 18, 4	22. 11. 42		2. 25, 7	
					7. 36		9, 6
W.	3	2. 12. 33. 56	4. 44. 24, 5	22. 19. 18		2. 16, 1	
					7. 13		9, 9
Th.	4	2. 13. 31. 22	4. 48. 31, 0	22. 26. 31		2. 6, 2	
					6. 49		10, 2
F.	5	2. 14. 28. 47	4. 52. 37, 8	22. 33. 20		1. 56, 0	
					6. 25		10, 6
Sa.	6	2. 15. 26. 11	4. 56. 45, 0	22. 39. 45		1. 45, 4	
					6. 1		10, 9
Sun.	7	2. 16. 23. 34	5. 0. 52, 4	22. 45. 46		1. 34, 5	
					5. 38		11, 1
M.	8	2. 17. 20. 56	5. 5. 0, 1	22. 51. 24		1. 23, 4	
					5. 14		11, 4
Tu.	9	2. 18. 18. 17	5. 9. 8, 1	22. 56. 38		1. 12, 0	
					4. 49		11, 6
W.	10	2. 19. 15. 36	5. 13. 16, 3	23. 1. 27		1. 0, 4	
					4. 25		11, 8
Th.	11	2. 20. 12. 55	5. 17. 24, 7	23. 5. 52		0. 48, 6	
					4. 1		12, 1
F.	12	2. 21. 10. 13	5. 21. 33, 3	23. 9. 53		0. 36, 5	
					3. 36		12, 2
Sa.	13	2. 22. 7. 30	5. 25. 42, 1	23. 13. 29		0. 24, 3	
					3. 12		12, 3
Sun.	14	2. 23. 4. 46	5. 29. 51, 1	23. 16. 41		0. 12, 0	
					2. 47		12, 5
						Add.	
M.	15	2. 24. 2. 2	5. 34. 0, 2	23. 19. 28		0. 0, 5	
					2. 23		12, 6
Tu.	16	2. 24. 59. 16	5. 38. 9, 3	23. 21. 51		0. 13, 1	
					1. 57		12, 7
W.	17	2. 25. 56. 30	5. 42. 18, 6	23. 23. 48		0. 25, 8	
					1. 33		12, 7
Th.	18	2. 26. 53. 44	5. 46. 27, 9	23. 25. 21		0. 38, 5	
					1. 9		12, 8
F.	19	2. 27. 50. 57	5. 50. 37, 4	23. 26. 30		0. 51, 3	
					0. 43		12, 9
Sa.	20	2. 28. 48. 10	5. 54. 46, 8	23. 27. 13		1. 4, 2	
					0. 19		12, 9
Sun.	21	2. 29. 45. 23	5. 58. 56, 3	23. 27. 32		1. 17, 1	
					0. 6		12, 9
M.	22	3. 0. 42. 36	6. 3. 5, 8	23. 27. 26		1. 30, 0	
					0. 31		12, 8
Tu.	23	3. 1. 39. 49	6. 7. 15, 2	23. 26. 55		1. 42, 8	
					0. 56		12, 9
W.	24	3. 2. 37. 2	6. 11. 24, 7	23. 25. 59		1. 55, 7	
					1. 20		12, 8
Th.	25	3. 3. 34. 16	6. 15. 34, 0	23. 24. 39		2. 8, 5	
					1. 45		12, 7
F.	26	3. 4. 31. 29	6. 19. 43, 3	23. 22. 54		2. 21, 2	
					2. 10		12, 5
Sa.	27	3. 5. 28. 43	6. 23. 52, 5	23. 20. 44		2. 33, 7	
					2. 34		12, 5
Sun.	28	3. 6. 25. 56	6. 28. 1, 5	23. 18. 10		2. 46, 2	
					2. 59		12, 2
M.	29	3. 7. 23. 9	6. 32. 10, 4	23. 15. 11		2. 58, 4	
					3. 24		12, 1
Tu.	30	3. 8. 20. 23	6. 36. 19, 0	23. 11. 47		3. 10, 5	
					3. 48		11, 8

Days	Time of ⊙'s Semidiam. passing Merid.	The SUN's Semi-diameter.	Hourly Motion.	Logar. Distance.	Place of the ☽'s Node.
	M. S.	M. S.	M. S.		S. D. M.
1	1. 8, 1	15. 47, 6	2. 23, 6	0. 006312	6. 4. 20
7	1. 8, 3	15. 46, 8	2. 23, 4	0. 006633	6. 4. 1
13	1. 8, 5	15. 46, 3	2. 23, 2	0. 006878	6. 3. 42
19	1. 8, 6	15. 45, 9	2. 23, 1	0. 007068	6. 3. 23
25	1. 8, 6	15. 45, 6	2. 23, 0	0. 007205	6. 3. 3

ECLIPSES of the SATELLITES of JUPITER.

MEAN TIME.

I. Satellite.		II. Satellite.		III. Satellite.	
Emersions.		*Emersions.*			
Days.	H. M. S.	Days.	H. M. S.	Days.	H. M. S.
1	17. 31. 24	* 4	13. 6. 42	● 4	18. 41. 29 Im.
* 3	12. 0. 4	8	2. 23. 51	4	21. 8. 44 E.
5	6. 28. 39	11	15. 41. 8	●11	22. 40. 2 Im.
7	0. 57. 20	15	4. 58. 25	12	1. 8. 8 E.
8	19. 25. 56	18	18. 15. 47	●19	2. 38. 47 Im.
*10	13. 54. 37	22	7. 33. 12	19	5. 7. 42 E.
12	8. 23. 15	25	20. 50. 40	●26	6. 38. 16 Im.
14	2. 51. 56	*29	10. 8. 12	26	9. 7. 59 E.
15	21. 20. 34				
17	15. 49. 17				
*19	10. 17. 56				
21	4. 46. 39				
22	23. 15. 18				
24	17. 44. 3			IV. Satellite.	
*26	12. 12. 43				
28	6. 41. 28				
30	1. 10. 8				

Days	THE PLANETS' Heliocentric Long.	Lat.	Geocentric Long.	Lat.	Declin.	Rt. Asc. *in Time.*	Passage Merid.
	S. D. M.	D.M.	S. D. M.	D.M.	D.M.	H. M.	H. M.
	☿		*MERCURY.*			Gr. Elong. 8d.	
1	6. 0.25	5. 2N	3. 3.16	2. 4N	25.29N	6.14	1.38
4	6.11.39	4. 0	3. 7. 7	1.49	25. 5	6.31	1.43
7	6.22. 1	2.53	3.10.28	1.27	24.30	6.46	1.45
10	7. 1.43	1.46	3.13.18	0.59	23.46	6.58	1.45
13	7.10.53	0.40N	3.15.34	0.24N	22.57	7. 8	1.42
16	7.19.39	0.25S	3.17.14	0.16S	22. 5	7.15	1.36
19	7.28. 9	1.27	3.18.15	1. 1	21.13	7.18	1.28
22	8. 6.28	2.25	3.18.35	1.49	20.23	7.19	1.16
25	8.14.42	3.21	3.18.15	2.37	19.37	7.18	1. 2
28	8.22.58	4.12	3.17.16	3.23	18.59	7.13	0.45
30	8.28.32	4.43	3.16.19	3.50	18.39	7. 9	0.33
	♀		*VENUS.*				
1	2.18.15	0.11N	2.13.48	0. 5N	22.33N	4.50	0.13
7	2.27.56	0.45	2.21.11	0.19	23.29	5.22	0.21
13	3. 7.39	1.18	2.28.33	0.33	24. 0	5.54	0.28
19	3.17.22	1.49	3. 5.55	0.46	24. 5	6.26	0.35
25	3.27. 6	2.16	3.13.17	0.58	23.45	6.58	0.43
	♂		*MARS.*				
1	3.20.45	1.39N	3. 5.31	1. 4N	24.25N	6.24	1.48
7	3.23.30	1.41	3. 9.24	1. 5	24.13	6.41	1.40
13	3.26.14	1.43	3.13.16	1. 6	23.54	6.58	1.32
19	3.28.58	1.45	3.17. 8	1. 7	23.28	7.15	1.24
25	4. 1.40	1.46	3.20.59	1. 8	22.56	7.32	1.16
	♃		*JUPITER.*				
1	8.10.25	0.37N	8.10.21	0.46N	21.15S	16.35	11.57
7	8.10.53	0.37	8. 9.35	0.45	21. 9	16.32	11.29
13	8.11.22	0.36	8. 8.51	0.45	21. 4	16.29	11. 1
19	8.11.50	0.36	8. 8. 8	0.44	20.58	16.26	10.33
25	8.12.19	0.35	8. 7.29	0.43	20.53	16.23	10. 6
	♄		*SATURN.*				
1	4. 5.44	0.35N	4. 0.49	0.33N	20.32N	8.13	3.36
7	4. 5.57	0.36	4. 1.25	0.33	20.24	8.15	3.14
13	4. 6.10	0.36	4. 2. 3	0.33	20.16	8.18	2.52
19	4. 6.23	0.37	4. 2.44	0.34	20. 7	8.21	2.30
25	4. 6.36	0.37	4. 3.25	0.34	19.57	8.23	2. 8
	♅		*GEORGIAN.*				
1	10. 3.47	0.36S	10. 6.12	0.37S	19.20S	20.35	15.56
11	10. 3.54	0.36	10. 6. 0	0.37	19.23	20.34	15.14
21	10. 4. 0	0.36	10. 5.44	0.38	19.28	20.33	14.31

Days of the Week.	Days of the Month.	The MOON's Longitude. Noon.	Longitude. Midnight.	Latitude. Noon.	Latitude. Midnight.
		S. D. M. S.	S. D. M. S.	D. M. S.	D. M. S.
M.	1	2. 7. 35. 43	2. 14. 21. 36	4. 28. 35 S	4. 43. 18 S
Tu.	2	2. 21. 3. 23	2. 27. 40. 49	4. 53. 56	5. 0. 28
W.	3	3. 4. 13. 40	3. 10. 41. 50	5. 2. 57	5. 1. 29
Th.	4	3. 17. 5. 16	3. 23. 24. 5	4. 56. 14	4. 47. 24
F.	5	3. 29. 38. 25	4. 5. 48. 35	4. 35. 12	4. 19. 55
Sa.	6	4. 11. 54. 56	4. 17. 57. 52	4. 1. 46	3. 41. 3
Sun.	7	4. 23. 57. 54	4. 29. 55. 35	3. 18. 1	2. 52. 57
M.	8	5. 5. 51. 33	5. 11. 46. 24	2. 26. 7	1. 57. 47
Tu.	9	5. 17. 40. 47	5. 23. 35. 24	1. 28. 12	0. 57. 39 S
W.	10	5. 29. 30. 55	6. 5. 28. 2	0. 26. 25 S	0. 5. 14 N
Th.	11	6. 11. 27. 23	6. 17. 29. 36	0. 37. 2 N	1. 8. 38
F.	12	6. 23. 35. 20	6. 29. 45. 5	1. 39. 44	2. 9. 58
Sa.	13	7. 5. 59. 22	7. 12. 18. 33	2. 38. 59	3. 6. 24
Sun.	14	7. 18. 42. 59	7. 25. 12. 51	3. 31. 49	3. 54. 49
M.	15	8. 1. 48. 16	8. 8. 29. 10	4. 15. 0	4. 31. 57
Tu.	16	8. 15. 15. 23	8. 22. 6. 40	4. 45. 19	4. 54. 44
W.	17	8. 29. 2. 35	9. 6. 2. 35	4. 59. 56	5. 0. 42
Th.	18	9. 13. 6. 5	9. 20. 12. 28	4. 56. 54	4. 48. 29
F.	19	9. 27. 21. 1	10. 4. 31. 1	4. 35. 30	4. 18. 9
Sa.	20	10. 11. 41. 49	10. 18. 52. 48	3. 56. 40	3. 31. 24
Sun.	21	10. 26. 3. 25	11. 3. 13. 11	3. 2. 47	2. 31. 18
M.	22	11. 10. 21. 44	11. 17. 28. 46	1. 57. 31	1. 21. 59
Tu.	23	11. 24. 34. 5	0. 1. 37. 31	0. 45. 18 N	0. 8. 5 N
W.	24	0. 8. 39. 1	0. 15. 38. 29	0. 29. 6 S	1. 5. 39 S
Th.	25	0. 22. 35. 53	0. 29. 31. 12	1. 41. 2	2. 14. 43
F.	26	1. 6. 24. 22	1. 13. 15. 20	2. 46, 14	3. 15. 8
Sa.	27	1. 20. 3. 59	1. 26. 50. 13	3. 41. 4	4. 3. 41
Sun.	28	2. 3. 33. 53	2. 10. 14. 49	4. 22. 45	4. 38. 3
M.	29	2. 16. 52. 49	2. 23. 27. 43	4. 49. 26	4. 56. 52
Tu.	30	2. 29. 59. 19	3. 6. 27. 28	5. 0. 20	4. 59. 54

Days of the Month.	Age.	Pass. Merid.	THE MOON's Right Ascension. Noon.	Right Ascension. Midnight.	Declination. Noon.	Declination. Midnight.
	D.	H. M.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
1	1	6	66. 33. 51	73. 36. 16	17. 10. 37 N	17. 51. 4 N
2	2	0. 44	80. 36. 44	87. 33. 51	18. 16. 9	18. 25. 54
3	3	1. 37	94. 26. 14	101. 12. 43	18. 20. 42	18. 1. 8
4	4	2. 28	107. 52. 20	114. 24. 27	17. 28. 1	16. 42. 24
5	5	3. 17	120. 48. 41	127. 5. 2	15. 45. 21	14. 37. 59
6	6	4. 3	133. 13. 44	139. 15. 16	13. 21. 30	11. 57. 1
7	7	4. 48	145. 10. 21	150. 59. 52	10. 25. 39	8. 48. 25
8	8	5. 31	156. 44. 51	162. 26. 25	7. 6. 18	5. 20. 14
9	9	6. 14	168. 5. 45	173. 44. 7	3. 31. 9 N	1. 39. 54 N
10	10	6. 56	179. 22. 48	185. 3. 8	0. 12. 40 S	2. 5. 37 S
11	11	7. 39	190. 46. 25	196. 33. 56	3. 58. 1	5. 48. 56
12	12	8. 24	202. 26. 57	208. 26. 37	7. 37. 18	9. 21. 57
13	13	9. 10	214. 34. 1	220. 50. 2	11. 1. 38	12. 35. 0
14	14	10. 0	227. 15. 21	233. 50. 23	14. 0. 37	15. 16. 57
15	15	10. 52	240. 35. 13	247. 29. 30	16. 22. 27	17. 15. 36
16	16	11. 46	254. 32. 29	261. 43. 4	17. 54. 56	18. 19. 13
17	17	12. 43	268. 59. 42	276. 20. 32	18. 27. 25	18. 18. 52
18	18	13. 40	283. 43. 38	291. 7. 4	17. 53. 17	17. 10. 51
19	19	14. 36	298. 28. 58	305. 47. 44	16. 12. 6	14. 58. 2
20	20	15. 31	313. 2. 13	320. 11. 38	13. 29. 59	11. 49. 32
21	21	16. 25	327. 15. 37	334. 14. 13	9. 58. 30	7. 58. 50
22	22	17. 18	341. 7. 49	347. 57. 5	5. 52. 30	3. 41. 33 S
23	23	18. 9	354. 42. 55	1. 26. 16	1. 28. 0 S	0. 46. 14 N
24	24	19. 0	8. 8. 11	14. 49. 41	2. 59. 13 N	5. 9. 7
25	25	19. 52	21. 31. 44	28. 15. 8	7. 14. 9	9. 12. 38
26	26	20. 44	35. 0. 28	41. 48. 9	11. 2. 58	12. 43. 39
27	27	21. 37	48. 38. 13	55. 30. 32	14. 13. 18	15. 30. 44
28	28	22. 30	62. 24. 34	69. 19. 34	16. 34. 55	17. 25. 3
29	29	23. 22	76. 14. 27	83. 8. 8	18. 0. 37	18. 21. 20
30	1	6	89. 59. 17	96. 46. 34	18. 27. 13	18. 18. 33

Days of the Week.	Days of the Month.	THE MOON's Semidiameter.		Hor. Parallax.		Proportional Logarithm.	
		Noon.	*Midnight.*	*Noon.*	*Midnight.*		
		M. S.	M. S.	M. S.	M. S.	*Noon.*	*Midn.*
M.	1	15. 45	15. 40	57. 47	57. 29	4935	4957
Tu.	2	15. 34	15. 29	57. 10	56. 50	4981	5007
W.	3	15. 24	15. 19	56. 31	56. 11	5031	5057
Th.	4	15. 14	15. 9	55. 52	55. 34	5081	5105
F.	5	15. 4	15. 0	55. 17	55. 2	5127	5146
Sa.	6	14. 56	14. 53	54. 48	54. 36	5165	5181
Sun.	7	14. 50	14. 48	54. 27	54. 20	5193	5202
M.	8	14. 47	14. 46	54. 15	54. 13	5209	5211
Tu.	9	14. 47	14. 48	54. 14	54. 17	5210	5206
W.	10	14. 49	14. 51	54. 23	54. 31	5198	5187
Th.	11	14. 54	14. 58	54. 41	54. 54	5174	5157
F.	12	15. 1	15. 6	55. 8	55. 25	5139	5116
Sa.	13	15. 11	15. 16	55. 43	56. 3	5093	5067
Sun.	14	15. 22	15. 28	56. 23	56. 44	5041	5014
M.	15	15. 33	15. 39	57. 5	57. 27	4988	4960
Tu.	16	15. 45	15. 50	57. 47	58. 6	4935	4911
W.	17	15. 55	15. 59	58. 24	58. 41	4889	4868
Th.	18	16. 3	16. 7	58. 55	59. 8	4850	4834
F.	19	16. 10	16. 11	59. 18	59. 25	4822	4814
Sa.	20	16. 13	16. 14	59. 30	59. 33	4808	4804
Sun.	21	16. 14	16. 14	59. 34	59. 33	4803	4804
M.	22	16. 13	16. 11	59. 30	59. 25	4808	4814
Tu.	23	16. 10	16. 8	59. 19	59. 11	4821	4831
W.	24	16. 5	16. 3	59. 3	58. 53	4841	4853
Th.	25	16. 0	15. 57	58. 43	58. 32	4865	4879
F.	26	15. 54	15. 50	58. 20	58. 8	4894	4908
Sa.	27	15. 47	15. 43	57. 55	57. 41	4925	4942
Sun.	28	15. 39	15. 35	57. 27	57. 12	4960	4979
M.	29	15. 31	15. 27	56. 57	56. 41	4998	5018
Tu.	30	15. 22	15. 18	56. 25	56. 9	5039	5059

DISTANCES of the MOON's *Centre* from the SUN, and from STARS *EAST* of her.

Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
Regulus.	4	40. 40. 52	39. 6. 31	37. 32. 27	35. 58. 42	34. 25. 15	32. 52. 7	31. 19. 17	29. 46. 47
	5	28. 14. 36	26. 42. 43	25. 11. 10	23. 39. 58	22. 9. 9	20. 38. 43	19. 8. 42	17. 39. 5
	6	16. 9. 55	- - -	- - -	- - -	- - -	- - -	- - -	- - -
Spica ♍.	6	69. 27. 42	67. 56. 57	66. 26. 23	64. 56. 0	63. 25. 48	61. 55. 47	60. 25. 54	58. 56. 10
	7	57. 26. 36	55. 57. 10	54. 27. 51	52. 58. 39	51. 29. 34	50. 0. 36	48. 31. 42	47. 2. 54
	8	45. 34. 11	44. 5. 32	42. 36. 56	41. 8. 24	39. 39. 55	38. 11. 29	36. 43. 4	35. 14. 42
	9	33. 46. 21	- - -	- - -	- - -	- - -	- - -	- - -	- - -
Antares.	9	79. 37. 25	78. 9. 40	76. 41. 53	75. 14. 5	73. 46. 15	72. 18. 23	70. 50. 27	69. 22. 27
	10	67. 54. 24	66. 26. 16	64. 58. 2	63. 29. 44	62. 1. 20	60. 32. 51	59. 4. 15	57. 35. 32
	11	56. 6. 44	54. 37. 48	53. 8. 45	51. 39. 35	50. 10. 18	48. 40. 52	47. 11. 20	45. 41. 41
	12	44. 11. 55	42. 42. 2	41. 12. 3	39. 42. 1	38. 11. 54	36. 41. 45	35. 11. 33	33. 41. 21
	13	32. 11. 8	- - -	- - -	- - -	- - -	- - -	- - -	- - -
α Aquilæ.	13	82. 56. 11	81. 30. 33	80. 4. 42	78. 38. 39	77. 12. 26	75. 46. 3	74. 19. 31	72. 52. 50
	14	71. 26. 3	69. 59. 8	68. 32. 8	67. 5. 5	65. 37. 59	64. 10. 50	62. 43. 42	61. 16. 38
	15	59. 49. 38	58. 22. 45	56. 56. 2	55. 29. 29	54. 3. 10	- - -	- - -	- - -
Fomalhaut.	15	- - -	- - -	- - -	- - -	85. 6. 28	83. 34. 18	82. 1. 53	80. 29. 15
	16	78. 56. 25	77. 23. 24	75. 50. 14	74. 16. 57	72. 43. 33	71. 10. 3	69. 36. 30	68. 2. 56
	17	66. 29. 22	64. 55. 50	63. 22. 22	61. 49. 2	60. 15. 51	58. 42. 52	57. 10. 8	55. 37. 41
	18	54. 5. 33	- - -	- - -	- - -	- - -	- - -	- - -	- - -

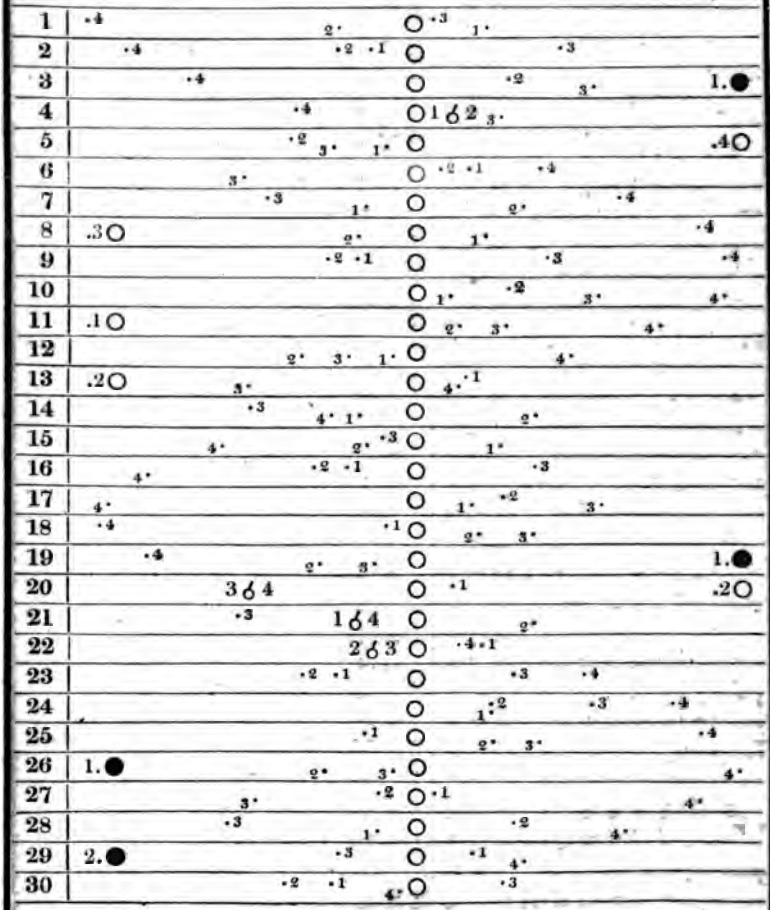
Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
	18	67. 38. 4	65. 58. 28	64. 18. 50	62. 39. 15	60. 59. 42	59. 20. 15	57. 40. 58	56. 1. 51
α Pegasi.	19	54. 22. 57	52. 44. 16	51. 5. 54	49. 27. 55	47. 50. 22	46. 13. 18	44. 36. 47	43. 0. 52
	20	41. 25. 37	- - -	- - -	- - -	- - -	- - -	- - -	- - -
	20	83. 0. 13	81. 15. 11	79. 30. 10	77. 45. 9	76. 0. 9	74. 15. 12	72. 30. 18	70. 45. 29
α Arietis.	21	69. 0. 44	67. 16. 5	65. 31. 34	63. 47. 10	62. 2. 55	60. 18. 49	58. 34. 54	56. 51. 11
	22	55. 7. 41	53. 24. 25	51. 41. 25	49. 58. 43	48. 16. 20	46. 34. 15	44. 52. 34	43. 11. 19
	23	41. 30. 33	39. 50. 18	38. 10. 37	36. 31. 32	34. 53. 6	- - -	- - -	- - -
	21	- - -	- - -	120. 18. 53	118. 38. 59	116. 59. 7	115. 19. 17	113. 39. 31	111. 59. 47
	22	110. 20. 7	108. 40. 31	107. 1. 0	105. 21. 34	103. 42. 12	102. 2. 56	100. 23. 45	98. 44. 41
	23	97. 5. 42	95. 26. 50	93. 48. 4	92. 9. 26	90. 30. 54	88. 52. 30	87. 14. 13	85. 36. 3
The Sun.	24	83. 58. 2	82. 20. 9	80. 42. 23	79. 4. 46	77. 27. 18	75. 49. 59	74. 12. 48	72. 35. 47
	25	70. 58. 54	69. 22. 10	67. 45. 36	66. 9. 11	64. 32. 56	62. 56. 51	61. 20. 56	59. 45. 11
	26	58. 9. 37	56. 34. 13	54. 59. 0	53. 23. 58	51. 49. 8	50. 14. 29	48. 40. 2	47. 5. 47
	27	45. 31. 44	43. 57. 54	42. 24. 17	40. 50. 53	39. 17. 42	- - -	- - -	- - -

DISTANCES of the MOON's *Centre* from the SUN, and from STARS *WEST* of her.

Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
The Sun.	4	- - -	- - -	- - -	- - -	39. 38. 35	41. 4. 25	42. 30. 1	43. 55. 25
	5	45. 20. 34	46. 45. 31	48. 10. 14	49. 34. 46	50. 59. 5	52. 23. 12	53. 47. 7	55. 10. 51
	6	56. 34. 23	57. 57. 44	59. 20. 55	60. 43. 56	62. 6. 46	63. 29. 27	64. 52. 0	66. 14. 25
	7	67. 36. 41	68. 58. 50	70. 20. 52	71. 42. 49	73. 4. 39	74. 26. 24	75. 48. 5	77. 9. 42
	8	78. 31. 15	79. 52. 44	81. 14. 12	82. 35. 37	83. 57. 0	85. 18. 22	86. 39. 45	88. 1. 8
	9	89. 22. 31	90. 43. 55	92. 5. 23	93. 26. 53	94. 48. 25	96. 10. 1	97. 31. 42	98. 53. 28
	10	100. 15. 18	101. 37. 14	102. 59. 18	104. 21. 29	105. 43. 46	107. 6. 11	108. 28. 46	109. 51. 30
	11	111. 14. 23	112. 37. 26	114. 0. 40	115. 24. 5	116. 47. 41	118. 11. 29	119. 35. 30	120. 59. 45
Pollux.	9	57. 17. 30	58. 43. 54	60. 10. 24	61. 37. 2	63. 3. 45	64. 30. 36	65. 57. 35	67. 24. 42
	10	68. 51. 56	70. 19. 19	71. 46. 52	73. 14. 34	74. 42. 25	76. 10. 26	77. 38. 37	79. 6. 59
	11	80. 35. 31	- - -	- - -	- - -	- - -	- - -	- - -	- - -
Regulus.	11	43. 59. 56	45. 30. 11	47. 0. 38	48. 31. 19	50. 2. 12	51. 33. 19	53. 4. 39	54. 36. 15
	12	56. 8. 4	57. 40. 8	59. 12. 28	60. 45. 3	62. 17. 54	63. 51. 2	65. 24. 27	66. 58. 9
	13	68. 32. 8	70. 6. 24	71. 40. 59	73. 15. 52	74. 51. 3	76. 26. 32	78. 2. 21	79. 38. 29
	14	81. 14. 56	- - -	- - -	- - -	- - -	- - -	- - -	- - -
Spica $\mathfrak{m}$.	14	27. 48. 13	29. 24. 22	31. 0. 54	32. 37. 50	34. 15. 8	35. 52. 49	37. 30. 52	39. 9. 16
	15	40. 48. 2	42. 27. 9	44. 6. 37	45. 46. 25	47. 26. 33	49. 7. 1	50. 47. 48	52. 28. 55
	16	54. 10. 21	55. 52. 6	57. 34. 10	59. 16. 32	60. 59. 11	62. 42. 8	64. 25. 21	66. 8. 51
	17	67. 52. 36	69. 36. 37	71. 20. 52	73. 5. 21	74. 50. 5	76. 35. 2	78. 20. 12	80. 5. 34
	18	81. 51. 9	- - -	- - -	- - -	- - -	- - -	- - -	- - -

Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
Antares.	18	36. 54. 57	38. 37. 24	40. 20. 16	42. 3. 30	43. 47. 5	45. 31. 0	47. 15. 12	48. 59. 41
	19	50. 44. 25	52. 29. 21	54. 14. 29	55. 59. 49	57. 45. 18	59. 30. 55	61. 16. 41	63. 2. 33
	20	64. 48. 31	66. 34. 34	68. 20. 40	70. 6. 51	71. 53. 4	73. 39. 19	75. 25. 36	77. 11. 53
	21	78. 58. 10	80. 44. 26	82. 30. 41	84. 16. 54	86. 3. 5	87. 49. 13	89. 35. 18	91. 21. 19
	22	93. 7. 15	94. 53. 7	96. 38. 53	98. 24. 33	100. 10. 7	- - -	- - -	- - -
α Aquilæ.	22	- - -	- - -	- - -	- - -	53. 34. 22	55. 5. 58	56. 38. 2	58. 10. 34
	23	59. 43. 29	61. 16. 46	62. 50. 23	64. 24. 16	65. 58. 24	67. 32. 43	69. 7. 12	70. 41. 50
	24	72. 16. 34	73. 51. 22	75. 26. 14	77. 1. 9	78. 36. 4	80. 10. 58	81. 45. 51	83. 20. 41
	25	84. 55. 27	86. 30. 8	88. 4. 43	89. 39. 10	91. 13. 29	- - -	- - -	- - -
Fomalhaut.	25	- - -	- - -	- - -	- - -	59. 31. 3	61. 3. 1	62. 35. 12	64. 7. 34
	26	65. 40. 6	67. 12. 46	68. 45. 32	70. 18. 23	71. 51. 17	73. 24. 12	74. 57. 7	76. 30. 2
	27	78. 2. 55	79. 35. 45	81. 8. 31	82. 41. 12	84. 13. 47	- - -	- - -	- - -

CONFIGURATIONS of the SATELLITES of JUPITER, at X o'Clock in the *Evening*.



Days of the Week.	Days of the Month.	*Sundays, and other remarkable Days.*
W.	1	
Th.	2	Visit. of B.V. Mary.
F.	3	
Sa.	4	Transl. of St. Martin.
Sun.	5	*3d Sunday after Trinity.*
M.	6	In 3 weeks of H. Tr. 4 ret.
Tu.	7	Oxf. Act and Camb. Com.
W.	8	Trinity Term ends.
Th.	9	
F.	10	Cambridge Term ends.
Sa.	11	Oxford Term ends.
Sun.	12	*4th Sunday after Trinity.*
M.	13	
Tu.	14	
W.	15	Swithin.
Th.	16	
F.	17	
Sa.	18	
Sun.	19	*5th Sun. after Trin. K. [Geo. IV. crowned* 1821.
M.	20	Margaret.
Tu.	21	
W.	22	Magdalen.
Th.	23	
F.	24	
Sa.	25	*St. James.*
Sun.	26	*6th Sund. after Trin.*
M.	27	[St. Anne.
Tu.	28	
W.	29	
Th.	30	
F.	31	

Phases of the MOON.

	D.	H.	M.
☽ *First Quarter*	8.	18.	31
○ Full Moon	16.	2.	42
☾ *Last Quarter*	22.	18.	14
● New Moon	30.	5.	39

Other *Phenomena.*

D.	H.	M.	
1.	5.	-	☽ ☿.
3.	23.	-	☽ ☌ ☊.
4.	3.	-	☽ ☍ ☊.
4.	13.	-	☽ ☐ ☊.
6.	11.	-	☽ △ ☊.
8.	5.	-	♀ ♂.
8.	17.	-	☽ ☌ ♍.
10.	1.	-	☽ ⚹ ♍.
11.	17.	-	☽ ☍ ♎.
12.	1.	-	☽ ☌ ♎.
12.	18.	-	☽ φ Oph.
13.	5.	-	♀ ♄.
13.	14.	-	♀ ☌ ♋.
16.	- .	-	☿ Stationary.
16.	16.	-	☽ ☍ ♑.
16.	23.	-	♄ ☌ ♋.
18.	15.	-	♂ ☌ ♋.
18.	15.	-	☽ ☌ ♒.
19.	0.	-	♂ ♄.
22.	10.	-	☽ ☍ ☓.
22.	17.	1	☉ enters ♌.
25.	0.	-	☿ ☊ ♊.
25.	6.	-	☽ ☍ ☿.
25.	7.	-	☽ 1 ☌ ☿.
25.	8.	-	☽ 2 ☌ ☿.
25.	13.	-	☽ ☍ ☿.
28.	13.	-	☿ ☌ ♊.
29.	- .	-	♃ Stationary.
30.	19.	-	♀ ☍ ☊.
31.	6.	-	☽ ☌ ☊.
31.	10.	-	☽ ☍ ☊.
31.	20.	-	☽ ☿ ☊.

Days of the Week.	Days of the Month.	THE SUN's Longitude.	Rt. Ascen. *in Time.*	Declin. *North.*	Diff.	Equation of Time. *Add to app. Time.*	Diff.
		S. D. M. S.	H. M. S.	D. M. S.	M. S.	M. S.	S.
W.	1	3. 9. 17. 36	6. 40. 27, 4	23. 7. 59	4. 12	3. 22, 3	11, 6
Th.	2	3. 10. 14. 50	6. 44. 35, 6	23. 3. 47	4. 36	3. 33, 9	11, 3
F.	3	3. 11. 12. 3	6. 48. 43, 5	22. 59. 11	5. 1	3. 45, 2	11, 0
Sa.	4	3. 12. 9. 17	6. 52. 51, 1	22. 54. 10	5. 24	3. 56, 2	10, 7
Sun.	5	3. 13. 6. 30	6. 56. 58, 4	22. 48. 46	5. 48	4. 6, 9	10, 3
M.	6	3. 14. 3. 43	7. 1. 5, 3	22. 42. 58	6. 12	4. 17, 2	10, 0
Tu.	7	3. 15. 0. 56	7. 5. 11, 9	22. 36. 46	6. 35	4. 27, 2	9, 6
W.	8	3. 15. 58. 8	7. 9. 18, 0	22. 30. 11	6. 58	4. 36, 8	9, 2
Th.	9	3. 16. 55. 21	7. 13. 23, 8	22. 23. 13	7. 22	4. 46, 0	8, 7
F.	10	3. 17. 52. 34	7. 17. 29, 1	22. 15. 51	7. 45	4. 54, 7	8, 3
Sa.	11	3. 18. 49. 46	7. 21. 33, 9	22. 8. 6	8. 8	5. 3, 0	7, 8
Sun.	12	3. 19. 46. 59	7. 25. 38, 4	21. 59. 58	8. 30	5. 10, 8	7, 4
M.	13	3. 20. 44. 11	7. 29. 42, 3	21. 51. 28	8. 52	5. 18, 2	6, 9
Tu.	14	3. 21. 41. 24	7. 33. 45, 8	21. 42. 36	9. 15	5. 25, 1	6, 4
W.	15	3. 22. 38. 37	7. 37. 48, 7	21. 33. 21	9. 36	5. 31, 5	5, 9
Th.	16	3. 23. 35. 50	7. 41. 51, 2	21. 23. 45	9. 59	5. 37, 4	5, 3
F.	17	3. 24. 33. 3	7. 45. 53, 1	21. 13. 46	10. 20	5. 42, 7	4, 9
Sa.	18	3. 25. 30. 17	7. 49. 54, 6	21. 3. 26	10. 42	5. 47, 6	4, 3
Sun.	19	3. 26. 27. 32	7. 53. 55, 5	20. 52. 44	11. 2	5. 51, 9	3, 9
M.	20	3. 27. 24, 48	7. 57. 55, 9	20. 41. 42	11. 24	5. 55, 8	3, 2
Tu.	21	3. 28. 22. 4	8. 1. 55, 7	20. 30. 18	11. 44	5. 59, 0	2, 8
W.	22	3. 29. 19. 21	8. 5. 55, 0	20. 18. 34	12. 5	6. 1, 8	2, 2
Th.	23	4. 0. 16. 40	8. 9. 53, 8	20. 6. 29	12. 25	6. 4, 0	1, 7
F.	24	4. 1. 13. 59	8. 13. 52, 0	19. 54. 4	12. 45	6. 5, 7	1, 1
Sa.	25	4. 2. 11. 19	8. 17. 49, 7	19. 41. 19	13. 5	6. 6, 8	0, 5
Sun.	26	4. 3. 8. 41	8. 21. 46, 8	19. 28. 14	13. 25	6. 7, 3	0, 0
M.	27	4. 4. 6. 3	8. 25. 43, 3	19. 14. 49	13. 43	6. 7, 3	0, 7
Tu.	28	4. 5. 3. 27	8. 29. 39, 2	19. 1. 6	14. 2	6. 6, 6	1, 2
W.	29	4. 6. 0. 51	8. 33. 34, 6	18. 47. 4	14. 21	6. 5, 4	1, 8
Th.	30	4. 6. 58. 16	8. 37. 29, 3	18. 32. 43	14. 39	6. 3, 6	2, 4
F.	31	4. 7. 55. 42	8. 41. 23, 4	18. 18. 4	14. 57	6. 1, 2	3, 0

Days	Time of ⊙'s Semidiam. passing Merid.	The SUN's Semi-diameter.	Hourly Motion.	Logar. Distance.	Place of the ☽'s Node.
	M. S.	M. S.	M. S.		S. D. M.
1	1. 8, 5	15. 45, 5	2. 23, 0	0. 007261	6. 2. 44
7	1. 8, 3	15. 45, 6	2. 23, 0	0. 007223	6. 2. 25
13	1. 8, 0	15. 45, 8	2. 23, 1	0. 007104	6. 2. 6
19	1. 7, 6	15. 46, 2	2. 23, 2	0. 006929	6. 1. 47
25	1. 7, 1	15. 46, 7	2. 23, 3	0. 006702	6. 1. 28

ECLIPSES of the SATELLITES of JUPITER.

MEAN TIME.

I. Satellite. *Emersions.*		II. Satellite. *Emersions.*		III. Satellite.	
Days.	H. M. S.	Days.	H. M. S.	Days.	H. M. S.
1	19. 38. 53	2	23. 25. 50	* 3	10. 37. 19 Im.
3	14. 7. 34	6	12. 43. 28	3	13. 7. 50 E.
5	8. 36. 20	10	2. 1. 14	10	14. 36. 35 Im.
7	3. 5. 2	13	15. 18. 55	10	17. 7. 53 E.
8	21. 33. 48	17	4. 36. 52	17	18. 35. 26 Im.
10	16. 2. 31	20	17. 54. 40	17	21. 7. 34 E.
*12	10. 31. 17	24	7. 12. 44	24	22. 34. 19 Im.
14	5. 0. 0	27	20. 30. 39	25	1. 7. 16 E.
15	23. 28. 47	*31	9. 48. 49		
17	17. 57. 30				
19	12. 26. 18				
21	6. 55. 2				
23	1. 23. 50				
24	19. 52. 33				
26	14. 21. 21			IV. Satellite.	
*28	8. 50. 5				
30	3. 18. 54				
31	21. 47. 38				

Days	THE PLANETS' Heliocentric Long.	Heliocentric Lat.	Geocentric Long.	Geocentric Lat.	Declin.	Rt. Asc. in Time.	Passage Merid.
	S. D. M.	D. M.	S. D. M.	D. M.	D. M.	H. M.	H. M.
	☿ Gr. Elong. 26d. *MERCURY.*					Inf. ☌ 5d. 3½h.	
1	9. 1.20	4.58 S	3.15.46	4. 3 S	18.30N	7. 6	0.26
4	9. 9.54	5.39	3.13.58	4.32	18.13	6.59	0. 6
7	9.18.46	6.13	3.12. 6	4.49	18. 7	6.51	23.39
10	9.28. 4	6.39	3.10.29	4.51	18.13	6.44	23.21
13	10. 7.53	6.55	3. 9.21	4.39	18.30	6.39	23. 5
16	10.18.24	7. 0	3. 8.55	4.14	18.56	6.38	22.52
19	10.29.44	6.49	3. 9.17	3.41	19.28	6.39	22.43
22	11.12. 4	6.19	3.10.31	3. 0	20. 3	6.45	22.38
25	11.25.33	5.26	3.12.37	2.16	20.36	6.54	22.36
28	0.10.21	4. 7	3.15.34	1.31	21. 3	7. 7	22.39
31	0.26.29	2.23	3.19.20	0.47	21.18	7.23	22.45
	♀		*VENUS.*				
1	4. 6.51	2.40N	3.20.39	1. 8 N	23. 0N	7.30	0.50
7	4.16.36	2.59	3.28. 1	1.17	21.51	8. 1	0.56
13	4.26.22	3.13	4. 5.23	1.24	20.18	8.32	1. 3
19	5. 6. 7	3.21	4.12.44	1.28	18.25	9. 3	1. 9
25	5.15.51	3.24	4.20. 5	1.31	16.14	9.32	1.14
	♂		*MARS.*				
1	4. 4.21	1.48N	3.24.50	1. 8 N	22.18N	7.48	1. 7
7	4. 7. 2	1.49	3.28.40	1. 9	21.34	8. 4	0.59
13	4. 9.42	1.50	4. 2.30	1. 9	20.44	8.20	0.50
19	4.12.22	1.50	4. 6.20	1. 9	19.49	8.36	0.42
25	4.15. 1	1.51	4.10. 9	1. 9	18.51	8.51	0.34
	♃		*JUPITER.*				
1	8.12.48	0.35N	8. 6.54	0.41N	20.48 S	16.21	9.39
7	8.13.16	0.34	8. 6.24	0.40	20.44	16.19	9.12
13	8.13.45	0.33	8. 6. 0	0.39	20.41	16.17	8.46
19	8.14.14	0.33	8. 5.42	0.38	20.39	16.16	8.20
25	8.14.42	0.32	8. 5.30	0.36	20.38	16.15	7.56
	♄		*SATURN.*			☌ 30d. 23¾h.	
1	4. 6.50	0.38N	4. 4. 8	0.34N	19.48N	8.26	1.46
7	4. 7. 3	0.38	4. 4.52	0.35	19.37	8.29	1.24
13	4. 7.16	0.39	4. 5.38	0.35	19.27	8.33	1. 3
19	4. 7.29	0.40	4. 6.23	0.36	19.16	8.36	0.42
25	4. 7.42	0.40	4. 7. 9	0.36	19. 5	8.39	0.21
	♅		*GEORGIAN.*			☌ 27d. 7½h.	
1	10. 4. 7	0.36 S	10. 5.25	0.38 S	19.33 S	20.32	13.49
11	10. 4.13	0.36	10. 5. 3	0.38	19.38	20.30	13. 6
21	10. 4.20	0.36	10. 4.39	0.38	19.44	20.29	12.25

Days of the Week.	Days of the Month.	The MOON's Longitude. Noon.	Longitude. Midnight.	Latitude. Noon.	Latitude. Midnight.
		S. D. M. S.	S. D. M. S.	D. M. S.	D. M. S.
W.	1	3. 12. 52. 2	3. 19. 12. 53	4. 55. 39 S	4. 47. 46 S
Th.	2	3. 25. 30. 5	4. 1. 43. 37	4. 36. 25	4. 21. 50
F.	3	4. 7. 53. 36	4. 14. 0. 13	4. 4. 18	3. 44. 5
Sa.	4	4. 20. 3. 44	4. 26. 4. 26	3. 21. 27	2. 56. 43
Sun.	5	5. 2. 2. 44	5. 7. 59. 4	2. 30. 9	2. 2. 4
M.	6	5. 13. 53. 58	5. 19. 47. 58	1. 32. 43	1. 2. 26
Tu.	7	5. 25. 41. 41	6. 1. 35. 45	0. 31. 28 S	0. 0. 7 S
W.	8	6. 7. 30. 49	6. 13. 27. 33	0. 31. 21 N	1. 2. 37 N
Th.	9	6. 19. 26. 41	6. 25. 28. 51	1. 33. 25	2. 3. 26
F.	10	7. 1. 34. 44	7. 7. 44. 58	2. 32. 20	2. 59. 47
Sa.	11	7. 14. 0. 8	7. 20. 20. 46	3. 25. 27	3. 48. 56
Sun.	12	7. 26. 47. 20	8. 3. 20. 8	4. 9. 53	4. 27. 53
M.	13	8. 9. 59. 24	8. 16. 45. 13	4. 42. 34	4. 53. 33
Tu.	14	8. 23. 37. 29	9. 0. 35. 58	5. 0. 29	5. 3. 5
W.	15	9. 7. 40. 16	9. 14. 49. 48	5. 1. 6	4. 54. 24
Th.	16	9. 22. 3. 51	9. 29. 21. 35	4. 42. 56	4. 26. 45
F.	17	10. 6. 42. 3	10. 14. 4. 17	4. 6. 3	3. 41. 9
Sa.	18	10. 21. 27. 19	10. 28. 50. 12	3. 12. 28	2. 40. 32
Sun.	19	11. 6. 12. 2	11. 13. 32. 3	2. 5. 57	1. 29. 22
M.	20	11. 20. 49. 36	11. 28. 4. 10	0. 51. 29 N	0. 12. 59 N
Tu.	21	0. 5. 15. 21	0. 12. 22. 51	0. 25. 27 S	1. 3. 11 S
W.	22	0. 19. 26. 29	0. 26. 26. 14	1. 39. 37	2. 14. 13
Th.	23	1. 3. 22. 2	1. 10. 13. 57	2. 46. 30	3. 16. 4
F.	24	1. 17. 2. 4	1. 23. 46. 30	3. 42. 33	4. 5. 39
Sa.	25	2. 0. 27. 21	2. 7. 4. 45	4. 25. 11	4. 40. 58
Sun.	26	2. 13. 38. 45	2. 20. 9. 31	4. 52. 53	5. 0. 53
M.	27	2. 26. 37. 4	3. 3. 1. 30	5. 4. 59	5. 5. 11
Tu.	28	3. 9. 22. 52	3. 15. 41. 13	5. 1. 36	4. 54. 21
W.	29	3. 21. 56. 35	3. 28. 9. 2	4. 43. 36	4. 29. 33
Th.	30	4. 4. 18. 38	4. 10. 25. 29	4. 12. 26	3. 52. 31
F.	31	4. 16. 29. 42	4. 22. 31. 29	3. 30. 4	3. 5. 22

Days of the Month.	Age.	Pass. Mer.	THE MOON's Right Ascension.		Declination.	
			Noon.	*Midnight.*	*Noon.*	*Midnight.*
	D.	H. M.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
1	2	0. 14	103. 29. 7	110. 5. 37	17. 55. 51 N	17. 19. 55 N
2	3	1. 4	116. 35. 32	122. 58. 19	16. 31. 38	15. 32. 6
3	4	1. 52	129. 13. 49	135. 22. 7	14. 22. 23	13. 3. 40
4	5	2. 37	141. 23. 33	147. 18. 40	11. 37. 7	10. 3. 52
5	6	3. 21	153. 8. 13	158. 53. 5	8. 25. 3	6. 41. 40
6	7	4. 4	164. 34. 20	170. 13. 4	4. 54. 43	3. 5. 8 N
7	8	4. 46	175. 50. 28	181. 27. 48	1. 13. 52 N	0. 38. 13 S
8	9	5. 29	187. 6. 20	192. 47. 23	2. 30. 14 S	4. 21. 18
9	10	6. 12	198. 32. 16	204. 22. 16	6. 10. 27	7. 56. 42
10	11	6. 57	210. 18. 39	216. 22. 34	9. 39. 0	11. 16. 12
11	12	7. 44	222. 35. 5	228. 57. 3	12. 47. 1	14. 10. 7
12	13	8. 34	235. 29. 5	242. 11. 32	15. 24. 3	16. 27. 19
13	14	9. 27	249. 4. 18	256. 6. 56	17. 18. 23	17. 55. 48
14	15	10. 23	263. 18. 33	270. 37. 47	18. 18. 11	18. 24. 23
15	16	11. 21	278. 2. 53	285. 31. 54	18. 13. 36	17. 45. 21
16	17	12. 19	293. 2. 45	300. 33. 24	16. 59. 39	15. 57. 2
17	18	13. 17	308. 1. 58	315. 26. 57	14. 38. 27	13. 5. 19
18	19	14. 13	322. 47. 15	330. 2. 11	11. 19. 23	9. 22. 43
19	20	15. 8	337. 11. 30	344. 15. 19	7. 17. 33	5. 6. 12
20	21	16. 1	351. 14. 7	358. 8. 34	2. 51. 0 S	0. 34. 12 S
21	22	16. 53	4. 59. 31	11. 47. 50	1. 42. 1 N	3. 55. 36 N
22	23	17. 45	18. 34. 26	25. 20. 12	6. 4. 38	8. 7. 22
23	24	18. 37	32. 5. 50	38. 51. 53	10. 2. 13	11. 47. 44
24	25	19. 30	45. 38. 43	52. 26. 29	13. 22. 38	14. 45. 49
25	26	20. 22	59. 15. 3	66. 4. 3	15. 56. 20	16. 53. 27
26	27	21. 14	72. 52. 55	79. 40. 53	17. 36. 38	18. 5. 33
27	28	22. 6	86. 27. 3	93. 10. 28	18. 20. 5	18. 20. 22
28	29	22. 56	99. 50. 12	106. 25. 21	18. 6. 45	17. 39. 46
29	30	23. 44	112. 55. 10	119. 19. 4	17. 0. 8	16. 8. 43
30	1	♂	125. 36. 41	131. 47. 53	15. 6. 29	13. 54. 28
31	2	0. 31	137. 52. 42	143. 51. 27	12. 33. 49	11. 5. 38

Days of the Week.	Days of the Month.	The MOON's Semidiameter.		Hor. Parallax.		Proportional Logarithm.	
		Noon.	*Midnight.*	*Noon.*	*Midnight.*		
		M. S.	M. S.	M. S.	M. S.	*Noon.*	*Midn.*
W.	1	15. 14	15. 10	55. 53	55. 38	5080	5099
Th.	2	15. 6	15. 2	55. 23	55. 9	5119	5137
F.	3	14. 58	14. 55	54. 56	54. 44	5154	5170
Sa.	4	14. 52	14. 49	54. 33	54. 24	5185	5197
Sun.	5	14. 48	14. 46	54. 17	54. 12	5206	5213
M.	6	14. 45	14. 45	54. 9	54. 8	5217	5218
Tu.	7	14. 45	14. 46	54. 9	54. 13	5217	5211
W.	8	14. 48	14. 51	54. 20	54. 29	5202	5190
Th.	9	14. 54	14. 58	54. 41	54. 55	5174	5156
F.	10	15. 3	15. 8	55. 12	55. 31	5133	5108
Sa.	11	15. 13	15. 19	55. 51	56. 14	5082	5053
Sun.	12	15. 26	15. 33	56. 38	57. 3	5022	4990
M.	13	15. 40	15. 47	57. 28	57. 54	4959	4926
Tu.	14	15. 53	16. 0	58. 19	58. 43	4895	4865
W.	15	16. 6	16. 12	59. 6	59. 26	4837	4812
Th.	16	16. 17	16. 21	59. 44	59. 59	4791	4772
F.	17	16. 24	16. 26	60. 11	60. 19	4758	4748
Sa.	18	16. 27	16. 28	60. 23	60. 24	4744	4742
Sun.	19	16. 27	16. 25	60. 21	60. 16	4746	4752
M.	20	16. 23	16. 20	60. 6	59. 55	4764	4777
Tu.	21	16. 16	16. 12	59. 41	59. 26	4794	4812
W.	22	16. 7	16. 2	59. 9	58. 51	4833	4855
Th.	23	15. 57	15. 52	58. 33	58. 15	4877	4900
F.	24	15. 47	15. 42	57. 56	57. 38	4923	4946
Sa.	25	15. 37	15. 32	57. 20	57. 2	4969	4991
Sun.	26	15. 28	15. 23	56. 45	56. 29	5013	5034
M.	27	15. 19	15. 15	56. 13	55. 57	5054	5075
Tu.	28	15. 11	15. 7	55. 43	55. 29	5093	5111
W.	29	15. 3	15. 0	55. 15	55. 2	5129	5146
Th.	30	14. 57	14. 54	54. 50	54. 40	5162	5175
F.	31	14. 51	14. 49	54. 31	54. 22	5187	5199

DISTANCES of the Moon's *Centre* from the Sun, and from Stars *EAST* of her.

Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
Spica ♍.	3	73. 28. 18	71. 56. 40	70. 25. 12	68. 53. 56	67. 22. 51	65. 51. 57	64. 21. 13	62. 50. 39
	4	61. 20. 16	59. 50. 3	58. 20. 0	56. 50. 5	55. 20. 20	53. 50. 43	52. 21. 14	50. 51. 53
	5	49. 22. 40	47. 53. 35	46. 24. 36	44. 55. 43	43. 26. 58	41. 58. 19	40. 29. 44	39. 1. 15
	6	37. 32. 51	- - -	- - -	- - -	- - -	- - -	- - -	- - -
Antares.	6	83. 23. 10	81. 55. 28	80. 27. 49	79. 0. 11	77. 32. 37	76. 5. 4	74. 37. 31	73. 9. 59
	7	71. 42. 28	70. 14. 56	68. 47. 24	67. 19. 50	65. 52. 15	64. 24. 38	62. 56. 59	61. 29. 17
	8	60. 1. 33	58. 33. 46	57. 5. 55	55. 38. 0	54. 10. 1	52. 41. 57	51. 13. 48	49. 45. 35
	9	48. 17. 17	46. 48. 54	45. 20. 26	43. 51. 55	42. 23. 19	40. 54. 40	39. 25. 57	37. 57. 12
	10	36. 28. 23	- - -	- - -	- - -	- - -	- - -	- - -	- - -
∝ Aquilæ.	10	86. 50. 17	85. 26. 33	84. 2. 36	82. 38. 27	81. 14. 6	79. 49. 33	78. 24. 49	76. 59. 55
	11	75. 34. 50	74. 9. 35	72. 44. 11	71. 18. 39	69. 52. 59	68. 27. 11	67. 1. 17	65. 35. 19
	12	64. 9. 18	62. 43. 15	61. 17. 11	59. 51. 8	58. 25. 6	- - -	- - -	- - -
Fomalhaut.	12	- - -	- - -	- - -	- - -	89. 51. 57	88. 21. 15	86. 50. 11	85. 18. 48
	13	83. 47. 4	82. 15. 2	80. 42. 42	79. 10. 6	77. 37. 14	76. 4. 7	74. 30. 46	72. 57. 13
	14	71. 23. 29	69. 49. 34	68. 15. 32	66. 41. 24	65. 7. 12	63. 32. 56	61. 58. 40	60. 24. 28
	15	58. 50. 22	57. 16. 25	55. 42. 38	54. 9. 6	52. 35. 51	- - -	- - -	- - -
∝ Pegasi.	15	- - -	- - -	- - -	- - -	66. 1. 23	64. 20. 27	62. 39. 25	60. 58. 20
	16	59. 17. 15	57. 36. 13	55. 55. 18	54. 14. 32	52. 33. 58	50. 53. 36	49. 13. 34	47. 33. 56
	17	45. 54. 48	44. 16. 13	42. 38. 17	41. 1. 3	39. 24. 37	- - -	- - -	- - -

Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
	17	- - -	- - -	- - -	- - -	80. 42. 49	78. 54. 57	77. 7. 4	75. 19. 10
α Arietis.	18	73. 31. 18	71. 43. 28	69. 55. 41	68. 8. 0	66. 20. 25	64. 32. 58	62. 45. 40	60. 58. 34
	19	59. 11. 40	57. 24. 59	55. 38. 35	53. 52. 28	52. 6. 40	50. 21. 12	48. 36. 8	46. 51. 30
	20	45. 7. 21	43. 23. 43	41. 40. 38	39. 58. 9	38. 16. 19	- - -	- - -	- - -
	20	- - -	- - -	- - -	- - -	69. 27. 17	67. 38. 44	65. 50. 25	64. 2. 19
Aldebaran.	21	62. 14. 27	60. 26. 49	58. 39. 26	56. 52. 17	55. 5. 23	53. 18. 45	51. 32. 22	49. 46. 14
	22	48. 0. 22	46. 14. 45	44. 29. 25	42. 44. 20	40. 59. 31	39. 14. 58	37. 30. 42	35. 46. 42
	23	34. 2. 58	- - -	- - -	- - -	- - -	- - -	- - -	- - -
	20	- - -	- - -	- - -	121. 30. 24	119. 49. 15	118. 8. 18	116. 27. 33	114. 47. 1
	21	113. 6. 41	111. 26. 35	109. 46. 43	108. 7. 5	106. 27. 41	104. 48. 33	103. 9. 39	101. 31. 0
	22	99. 52. 37	98. 14. 29	96. 36. 36	94. 58. 59	93. 21. 37	91. 44. 32	90. 7. 42	88. 31. 9
The Sun.	23	86. 54. 51	85. 18. 49	83. 43. 3	82. 7. 33	80. 32. 18	78. 57. 19	77. 22. 36	75. 48. 9
	24	74. 13. 57	72. 40. 0	71. 6. 19	69. 32. 53	67. 59. 42	66. 26. 46	64. 54. 5	63. 21. 39
	25	61. 49. 28	60. 17. 31	58. 45. 48	57. 14. 20	55. 43. 6	54. 12. 7	52. 41. 22	51. 10. 51
	26	49. 40. 34	48. 10. 30	46. 40. 40	45. 11. 4	43. 41. 42	42. 12. 34	40. 43. 39	39. 14. 59

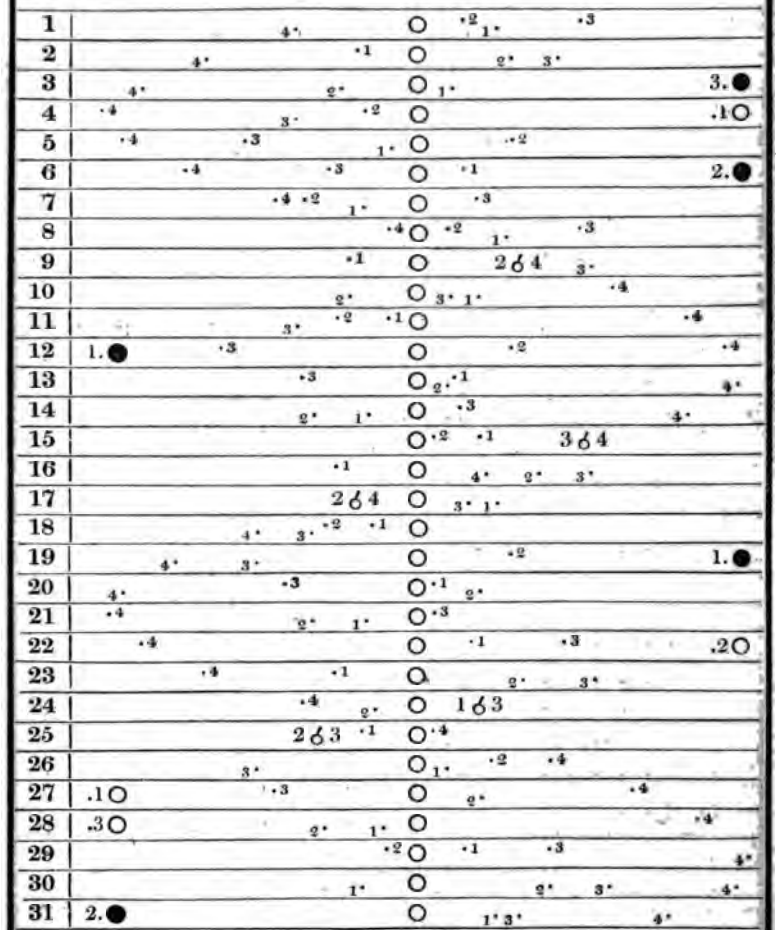
DISTANCES of the Moon's *Centre* from the Sun, and from Stars *WEST* of her.

Stars' Names	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
The Sun.	4	- - -	39. 24. 30	40. 46. 53	42. 9. 10	43. 31. 20	44. 53. 24	46. 15. 23	47. 37. 17
	5	48. 59. 5	50. 20. 48	51. 42. 27	53. 4. 1	54. 25. 31	55. 46. 57	57. 8. 21	58. 29. 42
	6	59. 50. 59	61. 12. 14	62. 33. 29	63. 54. 42	65. 15. 54	66. 37. 6	67. 58. 19	69. 19. 33
	7	70. 40. 48	72. 2. 5	73. 23. 25	74. 44. 48	76. 6. 13	77. 27. 42	78. 49. 17	80. 10. 56
	8	81. 32. 42	82. 54. 33	84. 16. 31	85. 38. 37	87. 0. 50	88. 23. 12	89. 45. 44	91. 8. 26
	9	92. 31. 17	93. 54. 18	95. 17. 32	96. 40. 58	98. 4. 35	99. 28. 25	100. 52. 30	102. 16. 49
	10	103. 41. 21	105. 6. 9	106. 31. 13	107. 56. 33	109. 22. 9	110. 48. 2	112. 14. 13	113. 40. 42
	11	115. 7. 29	116. 34. 35	118. 1. 59	119. 29. 44	120. 57. 48	- - -	- - -	- - -
Regulus.	8	- - -	- - -	- - -	- - -	46. 0. 12	47. 29. 46	48. 59. 31	50. 29. 26
	9	51. 59. 30	53. 29. 46	55. 0. 15	56. 30. 56	58. 1. 49	59. 32. 56	61. 4. 18	62. 35. 54
	10	64. 7. 45	65. 39. 51	67. 12. 14	68. 44. 54	70. 17. 50	71. 51. 4	73. 24. 36	74. 58. 27
	11	76. 32. 37	- - -	- - -	- - -	- - -	- - -	- - -	- - -
Spica ♍.	11	23. 10. 59	24. 44. 24	26. 18. 16	27. 52. 35	29. 27. 20	31. 2. 31	32. 38. 8	34. 14. 11
	12	35. 50. 39	37. 27. 31	39. 4. 48	40. 42. 29	42. 20. 36	43. 59. 8	45. 38. 4	47. 17. 24
	13	48. 57. 10	50. 37. 21	52. 17. 56	53. 58. 55	55. 40. 19	57. 22. 7	59. 4. 19	60. 46. 54
	14	62. 29. 53	64. 13. 15	65. 57. 1	67. 41. 9	69. 25. 40	71. 10. 33	72. 55. 47	74. 41. 22
	15	76. 27. 19	- - -	- - -	- - -	- - -	- - -	- - -	- - -

Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
Antares.	15	31. 43. 33	33. 25. 20	35. 7. 49	36. 50. 56	38. 34. 39	40. 18. 56	42. 3. 45	43. 49. 4
	16	45. 34. 49	47. 20. 57	49. 7. 29	50. 54. 22	52. 41. 34	54. 29. 4	56. 16. 50	58. 4. 50
	17	59. 53. 6	61. 41. 33	63. 30. 10	65. 18. 58	67. 7. 54	68. 56. 57	70. 46. 6	72. 35. 20
	18	74. 24. 38	76. 13. 59	78. 3. 21	79. 52. 44	81. 42. 7	83. 31. 27	85. 20. 45	87. 9. 59
	19	88. 59. 9	90. 48. 13	92. 37. 11	94. 26. 2	96. 14. 45	98. 3. 19	99. 51. 43	101. 39. 57
	20	103. 27. 59	- - -	- - -	- - -	- - -	- - -	- - -	- - -
α Aquilæ.	20	56. 35. 6	58. 9. 56	59. 45. 6	61. 20. 33	62. 56. 15	64. 32. 10	66. 8. 15	67. 44. 27
	21	69. 20. 45	70. 57. 6	72. 33. 28	74. 9. 48	75. 46. 4	- - -	- - -	- - -
Fomalhaut.	21	- - -	- - -	- - -	- - -	44. 38. 52	46. 7. 15	47. 36. 19	49. 6. 1
	22	50. 36. 17	52. 7. 3	53. 38. 15	55. 9. 50	56. 41. 44	58. 13. 49	59. 46. 7	61. 18. 34
	23	62. 51. 10	64. 23. 51	65. 56. 35	67. 29. 19	69. 2. 2	- - -	- - -	- - -
α Pegasi.	23	- - -	- - -	- - -	- - -	53. 19. 5	54. 53. 22	56. 27. 42	58. 2. 5
	24	59. 36. 29	61. 10. 53	62. 45. 16	64. 19. 38	65. 53. 56	67. 28. 9	69. 2. 18	70. 36. 20
	25	72. 10. 17	73. 44. 6	75. 17. 48	76. 51. 21	78. 24. 45	- - -	- - -	- - -
α Arietis.	25	- - -	- - -	- - -	- - -	34. 53. 53	36. 25. 1	37. 56. 26	39. 28. 5
	26	40. 59. 57	42. 31. 59	44. 4. 10	45. 36. 27	47. 8. 48	48. 41. 9	50. 13. 32	51. 45. 55
	27	53. 18. 17	54. 50. 37	56. 22. 54	57. 55. 7	59. 27. 14	- - -	- - -	- - -

CONFIGURATIONS of the SATELLITES of JUPITER,

At ½ an Hour past IX o'Clock in the *Evening*.



Days of the Week.	Days of the Month.	*Sundays, and other remarkable Days.*
Sa.	1	Lammas Day.
Sun.	2	*7th Sunday after Trinity.*
M.	3	
Tu.	4	
W.	5	
Th.	6	Transfig. of our Lord.
F.	7	Name of Jesus.
Sa.	8	
Sun.	9	*8th Sunday after Trinity.*
M.	10	St. Lawrence.
Tu.	11	
W.	12	*King Geo. IV. b.* 1762.
Th.	13	
F.	14	
Sa.	15	
Sun.	16	*9th Sunday after Trinity.*
M.	17	[*Duke of York b.*
Tu.	18	
W.	19	
Th.	20	
F.	21	*Duke of Clarence born.*
Sa.	22	
Sun.	23	*10th Sunday after Trinity.*
M.	24	*St. Bartholomew.*
Tu.	25	
W.	26	
Th.	27	
F.	28	St. Augustine.
Sa.	29	St. John Bapt. beheaded.
Sun.	30	*11th Sunday after Trinity.*
M.	31	

Phases of the MOON.

	D.	H.	M.
☽ *First Quarter* . . .	7.	10.	13
○ Full Moon	14.	10.	26
☾ *Last Quarter* . . .	21.	1.	35
● New Moon	28.	20.	55

Other *Phenomena.*

D.	H.	M.	
2.	18.	-	☽ ☌ ☊.
3.	6.	-	☽ ☍ ♍.
3.	22.	-	☽ ☊ ♍.
5.	0.	-	☽ ☋ ♍.
5.	1.	-	☿ ☌ ☊.
6.	9.	-	☽ ☌ ♍.
8.	1.	-	☽ ☍ ♎.
8.	10.	-	☽ ☋ ♎.
9.	3.	-	☽ ☍ Oph.
9.	18.	-	☿ ☌ ♋.
11.	8.	-	☿ ♄.
13.	2.	-	☽ ☍ ♑.
15.	1.	-	☽ ☋ ♒.
15.	13.	-	☿ ☍ ☊.
18.	17.	-	☽ ☌ ♓.
19.	23.	-	☌ ☿.
20.	17.	-	☌ ☍ ☊.
21.	11.	-	☽ ☍ ☿.
21.	13.	-	☽ 1 ☌ ☿.
21.	13.	-	☽ 2 ☌ ☿.
21.	18.	-	☽ ☍ ☿.
22.	5.	-	☿ ☍ ♍.
22.	23.	33	☉ enters ♍.
27.	12.	-	☽ ☌ ☊.
27.	17.	-	☽ ☌ ☊.
28.	21.	-	☿ ☊ ♍.
30.	0.	-	☽ ☌ ☊.
30.	13.	-	☽ ☍ ♍.
30.	14.	-	☿ ☌ ☊.
31.	4.	-	☽ ☊ ♍.
31.	10.	-	☽ ☿.

Days of the Week.	Days of the Month.	THE SUN's Longitude.	Rt. Ascen. *in Time.*	Declin. *North.*	Diff.	Equation of Time. *Add to app. Time.*	Diff.
		S. D. M. S.	H. M. S.	D. M. S.	M.S.	M. S.	S.
Sa.	1	4. 8. 53. 9	8. 45. 16, 9	18. 3. 7	15. 15	5. 58, 2	3, 7
Sun.	2	4. 9. 50. 37	8. 49. 9, 9	17. 47. 52	15. 33	5. 54, 5	4, 2
M.	3	4. 10. 48. 6	8. 53. 2, 2	17. 32. 19	15. 49	5. 50, 3	4, 9
Tu.	4	4. 11. 45. 35	8. 56. 53, 8	17. 16. 30	16. 6	5. 45, 4	5, 5
W.	5	4. 12. 43. 5	9. 0. 44, 9	17. 0. 24	16. 23	5. 39, 9	6, 1
Th.	6	4. 13. 40. 36	9. 4. 35, 4	16. 44. 1	16. 39	5. 33, 8	6, 6
F.	7	4. 14. 38. 7	9. 8. 25, 2	16. 27. 22	16. 54	5. 27, 2	7, 3
Sa.	8	4. 15. 35. 40	9. 12. 14, 4	16. 10. 28	17. 11	5. 19, 9	7, 9
Sun.	9	4. 16. 33. 13	9. 16. 3, 1	15. 53. 17	17. 25	5. 12, 0	8, 5
M.	10	4. 17. 30. 47	9. 19. 51, 1	15. 35. 52	17. 40	5. 3, 5	9, 1
Tu.	11	4. 18. 28. 22	9. 23. 38, 5	15. 18. 12	17. 55	4. 54, 4	9, 7
W.	12	4. 19. 25. 58	9. 27. 25, 4	15. 0. 17	18. 10	4. 44, 7	10, 2
Th.	13	4. 20. 23. 35	9. 31. 11, 7	14. 42. 7	18. 23	4. 34, 5	10, 8
F.	14	4. 21. 21. 13	9. 34. 57, 4	14. 23. 44	18. 37	4. 23, 7	11, 4
Sa.	15	4. 22. 18. 52	9. 38. 42, 6	14. 5. 7	18. 50	4. 12, 3	11, 8
Sun.	16	4. 23. 16. 33	9. 42. 27, 2	13. 46. 17	19. 4	4. 0, 5	12, 4
M.	17	4. 24. 14. 15	9. 46. 11, 4	13. 27. 13	19. 17	3. 48, 1	12, 9
Tu.	18	4. 25. 11. 59	9. 49. 55, 0	13. 7. 56	19. 29	3. 35, 2	13, 3
W.	19	4. 26. 9. 44	9. 53. 38, 2	12. 48. 27	19. 41	3. 21, 9	13, 8
Th.	20	4. 27. 7. 31	9. 57. 20, 9	12. 28. 46	19. 54	3. 8, 1	14, 3
F.	21	4. 28. 5. 20	10. 1. 3, 2	12. 8. 52	20. 5	2. 53, 8	14, 7
Sa.	22	4. 29. 3. 11	10. 4. 45, 0	11. 48. 47	20. 17	2. 39, 1	15, 1
Sun.	23	5. 0. 1. 4	10. 8. 26, 4	11. 28. 30	20. 27	2. 24, 0	15, 5
M.	24	5. 0. 58. 58	10. 12. 7, 3	11. 8. 3	20. 38	2. 8, 5	16, 0
Tu.	25	5. 1. 56. 54	10. 15. 47, 9	10. 47. 25	20. 49	1. 52, 5	16, 3
W.	26	5. 2. 54. 52	10. 19. 28, 1	10. 26. 36	20. 59	1. 36, 2	16, 8
Th.	27	5. 3. 52. 52	10. 23. 7, 9	10. 5. 37	21. 8	1. 19, 4	17, 1
F.	28	5. 4. 50. 53	10. 26. 47, 3	9. 44. 29	21. 18	1. 2, 3	17, 4
Sa.	29	5. 5. 48. 56	10. 30. 26, 3	9. 23. 11	21. 27	0. 44, 9	17, 8
Sun.	30	5. 6. 47. 0	10. 34. 5, 0	9. 1. 44	21. 35	0. 27, 1	18, 1
M.	31	5. 7. 45. 7	10. 37. 43, 4	8. 40. 9	21. 44	0. 9, 0	18, 4

Days	Time of ☉'s Semidiam. passing Merid.	The SUN's Semi-diameter.	Hourly Motion.	Logar. Distance.	Place of the ☽'s Node.
	M. S.	M. S.	M. S.		S. D. M.
1	1. 6, 5	15. 47, 5	2. 23, 6	0. 006334	6. 1. 6
7	1. 6, 0	15. 48, 4	2. 23, 8	0. 005928	6. 0. 47
13	1. 5, 5	15. 49, 3	2. 24, 2	0. 005460	6. 0. 28
19	1. 5, 0	15. 50, 5	2. 24, 5	0. 004957	6. 0. 9
25	1. 4, 6	15. 51, 7	2. 24, 9	0. 004412	5. 29. 50

ECLIPSES of the Satellites of JUPITER.

MEAN TIME.

I. Satellite.		II. Satellite.		III. Satellite.	
Emersions.		*Emersions.*			
Days.	H. M. S.	Days.	H. M. S.	Days.	H. M. S.
2	16. 16. 26	3	23. 6. 49	1	2. 33. 29 Im.
4	10. 45. 11	7	12. 25. 7	1	5. 7. 21 E.
6	5. 13. 59	11	1. 43. 10	8	6. 32. 48 Im.
7	23. 42. 44	14	15. 1. 40	* 8	9. 7. 28 E.
9	18. 11. 33	18	4. 19. 43	15	10. 32. 47 Im.
11	12. 40. 17	21	15. 9. 8 Im.	15	13. 8. 16 E.
13	7. 9. 6	21	17. 38. 21 E.	22	14. 32. 11 Im.
15	1. 37. 50	25	4. 27. 10 Im.	22	17. 8. 30 E.
16	20. 6. 39	25	6. 56. 29 E.	29	18. 31. 43 Im.
18	14. 35. 23	28	17. 45. 43 Im.	29	21. 8. 52 E.
*20	9. 4. 11	28	20. 15. 12 E.		
22	3. 32. 56				
23	22. 1. 44				
25	16. 30. 29				
27	10. 59. 17				
29	5. 28. 1				
30	23. 56. 49				

IV. Satellite.	

Days	THE PLANETS' Heliocentric Long.	Lat.	Geocentric Long.	Lat.	Declin.	Rt. Asc. in Time.	Passage Merid.
	S. D. M.	D.M.	S. D. M.	D.M.	D.M.	H. M.	H. M.
	☿		*MERCURY.*			Sup. ☌ 20d. 12¼h.	
1	1. 2.10	1.43 S	3.20.46	0.32 S	21.19N	7.29	22.47
4	1.19.58	0.27N	3.25.29	0. 8N	21.11	7.50	22.57
7	2. 8.37	2.40	4. 0.47	0.42	20.41	8.13	23. 8
10	2.27.33	4.38	4. 6.31	1. 9	19.47	8.37	23.21
13	3.16. 6	6. 3	4.12.29	1.29	18.30	9. 2	23.35
16	4. 3.42	6.50	4.18.34	1.41	16.53	9.26	23.48
19	4.19.59	6.59	4.24.37	1.46	14.59	9.50	0. 0
22	5. 4.50	6.38	5. 0.34	1.44	12.55	10.13	0. 8
25	5.18.18	5.57	5. 6.21	1.37	10.42	10.35	0.19
28	6. 0.33	5. 2	5.11.57	1.26	8.25	10.56	0.29
31	6.11.46	3.59	5.17.22	1.11	6. 6	11.15	0.38
	♀		*VENUS.*				
1	5.27.12	3.19N	4.28.40	1.31N	13.22N	10. 5	1.20
7	6. 6.55	3. 9	5. 6. 1	1.27	10.40	10.33	1.25
13	6.16.36	2.54	5.13.21	1.22	7.48	11. 1	1.30
19	6.26.15	2.33	5.20.41	1.14	4.49	11.28	1.34
25	7. 5.53	2. 9	5.28. 0	1. 3	1.45N	11.54	1.39
	♂		*MARS.*			☌ 18d. 15¾h.	
1	4.18. 6	1.51N	4.14.36	1. 9N	17.34N	9.10	0.24
7	4.20.44	1.51	4.18.25	1. 9	16.25	9.25	0.16
13	4.23.22	1.51	4.22.14	1. 9	15.12	9.40	0. 9
19	4.25.59	1.50	4.26. 3	1. 8	13.55	9.55	0. 1
25	4.28.36	1.49	4.29.52	1. 8	12.36	10.10	23.52
	♃		*JUPITER.*			□ 29d. 19¼h.	
1	8.15.16	0.31N	8. 5.24	0.35N	20.39 S	16.14	7.28
7	8.15.45	0.31	8. 5.27	0.34	20.41	16.15	7. 5
13	8.16.13	0.30	8. 5.35	0.32	20.44	16.15	6.43
19	8.16.42	0.30	8. 5.51	0.31	20.48	16.16	6.22
25	8.17.11	0.29	8. 6.13	0.30	20.53	16.18	6. 1
	♄		*SATURN.*				
1	4. 7.58	0.41N	4. 8. 3	0.37N	18.51N	8.43	23.54
7	4. 8.11	0.41	4. 8.50	0.37	18.40	8.46	23.34
13	4. 8.24	0.42	4. 9.36	0.38	18.28	8.49	23.15
19	4. 8.37	0.42	4.10.21	0.38	18.16	8.52	22.55
25	4. 8.51	0.43	4.11. 6	0.39	18. 5	8.55	22.36
	♅		*GEORGIAN.*				
1	10. 4.27	0.36 S	10. 4.13	0.38 S	19.50 S	20.27	11.40
11	10. 4.34	0.36	10. 3.50	0.38	19.56	20.25	11. 0
21	10. 4.41	0.36	10. 3.27	0.38	20. 1	20.23	10.21

Days of the Week.	Days of the Month.	The MOON's Longitude. Noon.	Longitude. Midnight.	Latitude. Noon.	Latitude. Midnight.
		S. D. M. S.	S. D. M. S.	D. M. S.	D. M. S.
Sa.	1	4. 28. 31. 1	5. 4. 28. 33	2. 38. 43 S	2. 10. 26 S
Sun.	2	5. 10. 24. 23	5. 16. 18. 52	1. 40. 48	1. 10. 10
M.	3	5. 22. 12. 26	5. 28. 5. 29	0. 38. 50 S	0. 7. 5 S
Tu.	4	6. 3. 58. 32	6. 9. 52. 6	0. 24. 46 N	0. 56. 28 N
W.	5	6. 15. 46. 44	6. 21. 43. 5	1. 27. 40	1. 58. 4
Th.	6	6. 27. 41. 44	7. 3. 43. 18	2. 27. 24	2. 55. 21
F.	7	7. 9. 48. 29	7. 15. 57. 52	3. 21. 35	3. 45. 48
Sa.	8	7. 22. 12. 6	7. 28. 31. 43	4. 7. 40	4. 26. 50
Sun.	9	8. 4. 57. 17	8. 11. 29. 14	4. 42. 59	4. 55. 44
M.	10	8. 18. 7. 56	8. 24. 53. 37	5. 4. 45	5. 9. 43
Tu.	11	9. 1. 46. 22	9. 8. 46. 6	5. 10. 21	5. 6. 25
W.	12	9. 15. 52. 34	9. 23. 5. 23	4. 57. 43	4. 44. 12
Th.	13	10. 0. 23. 55	10. 7. 47. 19	4. 25. 54	4. 2. 57
F.	14	10. 15. 14. 41	10. 22. 44. 56	3. 35. 40	3. 4. 27
Sa.	15	11. 0. 16. 57	11. 7. 49. 33	2. 29. 52	1. 52. 35
Sun.	16	11. 15. 21. 34	11. 22. 51. 56	1. 13. 20 N	0. 32. 55 N
M.	17	0. 0. 19. 40	0. 7. 43. 55	0. 7. 51 S	0. 48. 14 S
Tu.	18	0. 15. 3. 58	0. 22. 19. 18	1. 27. 27	2. 4. 50
W.	19	0. 29. 29. 30	1. 6. 34. 18	2. 39. 48	3. 11. 53
Th.	20	1. 13. 33. 34	1. 20. 27. 21	3. 40. 39	4. 5. 50
F.	21	1. 27. 15. 41	2. 3. 58. 44	4. 27. 11	4. 44. 33
Sa.	22	2. 10. 36. 44	2. 17. 9. 56	4. 57. 53	5. 7. 8
Sun.	23	2. 23. 38. 35	3. 0. 3. 1	5. 12. 21	5. 13. 36
M.	24	3. 6. 23. 30	3. 12. 40. 22	5. 10. 58	5. 4. 38
Tu.	25	3. 18. 53. 53	3. 25. 4. 21	4. 54. 44	4. 41. 28
W.	26	4. 1. 12. 1	4. 7. 17. 8	4. 25. 3	4. 5. 43
Th.	27	4. 13. 19. 57	4. 19. 20. 42	3. 43. 44	3. 19. 22
F.	28	4. 25. 19. 35	5. 1. 16. 53	2. 52. 55	2. 24. 40
Sa.	29	5. 7. 12. 48	5. 13. 7. 34	1. 54. 56	1. 24. 1
Sun.	30	5. 19. 1. 30	5. 24. 54. 51	0. 52. 15 S	0. 19. 57 S
M.	31	6. 0. 47. 57	6. 6. 41. 6	0. 12. 34 N	0. 44. 59 N

Days of the Month.	Age.	Pass. Merid.	THE MOON's Right Ascension.		Declination.	
			Noon.	*Midnight.*	*Noon.*	*Midnight.*
	D.	H. M.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
1	3	1.16	149.44.35	155.32.43	9.31. 2N	7.51. 8N
2	4	1.59	161.16.37	166.57. 9	6. 6.59	4.19.36
3	5	2.42	172.35.18	178.12. 7	2.29.58N	0.39. 4N
4	6	3.24	183.48.43	189.26.14	1.12.10S	3. 2.49S
5	7	4. 7	195. 5.50	200.48.45	4.51.58	6.38.44
6	8	4.50	206.36. 9	212.29.11	8.22. 6	10. 1. 3
7	9	5.36	218.28.58	224.36.32	11.34.34	13. 1.28
8	10	6.24	230.52.44	237.18.18	14.20.33	15.30.31
9	11	7.15	243.53.41	250.39. 4	16.30. 0	17.17.40
10	12	8. 9	257.34.16	264.38.45	17.52. 9	18.12. 8
11	13	9. 5	271.51.34	279.11.25	18.16.31	18. 4.22
12	14	10. 3	286.36.44	294. 5.48	17.35. 8	16.48.37
13	15	11. 1	301.36.47	309. 7.55	15.45. 4	14.25.16
14	16	11.59	316.37.38	324. 4.43	12.50.24	11. 2.10
15	17	12.57	331.28.16	338.47.44	9. 2.36	6.53.59
16	18	13.53	346. 2.56	353.13.58	4.38.52S	2.19.48S
17	19	14.48	0.21.10	7.25. 3	0. 0.38N	2.19.54N
18	20	15.42	14.26.10	21.25. 7	4.35.42	6.45.53
19	21	16.36	28.22.26	35.18.32	8.48.33	10.41.56
20	22	17.29	42.13.42	49. 8. 7	12.24.40	13.55.31
21	23	18.22	56. 1.41	62.54. 8	15.13.32	16.18. 2
22	24	19.15	69.45. 7	76.34. 3	17. 8.27	17.44.36
23	25	20. 7	83.20.17	90. 3.10	18. 6.23	18.13.57
24	26	20.57	96.41.58	103.16. 5	18. 7.39	17.47.59
25	27	21.46	109.44.59	116. 8.16	17.15.35	16.31.13
26	28	22.33	122.25.40	128.37. 5	15.35.44	14.30. 7
27	29	23.18	134.42.37	140.42.29	13.15.20	11.52.25
28	1	6	146.37. 3	152.26.51	10.22.25	8.46.24
29	2	0. 2	158.12.29	163.54.41	7. 5.25	5.20.31
30	3	0.45	169.34.15	175.12. 2	3.32.43N	1.43. 2N
31	4	1.28	180.48.59	186.26. 2	0. 7.34S	1.58. 4S

Days of the Week.	Days of the Month.	The MOON's Semidiameter.		Hor. Parallax.		Proportional Logarithm.	
		Noon.	*Midnight.*	*Noon.*	*Midnight.*		
		M. S.	M. S.	M. S.	M. S.	*Noon.*	*Midn.*
Sa.	1	14. 47	14. 45	54. 14	54. 8	5210	5218
Sun.	2	14. 44	14. 43	54. 4	54. 1	5223	5227
M.	3	14. 43	14. 43	54. 0	54. 0	5229	5229
Tu.	4	14. 44	14. 45	54. 3	54. 8	5225	5218
W.	5	14. 47	14. 50	54. 15	54. 24	5209	5197
Th.	6	14. 53	14. 57	54. 36	54. 50	5181	5162
F.	7	15. 1	15. 6	55. 6	55. 25	5141	5116
Sa.	8	15. 12	15. 18	55. 47	56. 10	5088	5058
Sun.	9	15. 24	15. 32	56. 35	57. 2	5026	4991
M.	10	15. 40	15. 48	57. 30	57. 58	4956	4921
Tu.	11	15. 56	16. 3	58. 27	58. 55	4885	4850
W.	12	16. 11	16. 18	59. 22	59. 48	4817	4786
Th.	13	16. 24	16. 29	60. 10	60. 29	4759	4736
F.	14	16. 33	16. 36	60. 45	60. 56	4717	4704
Sa.	15	16. 38	16. 39	61. 4	61. 7	4695	4691
Sun.	16	16. 39	16. 37	61. 5	60. 59	4693	4701
M.	17	16. 34	16. 30	60. 48	60. 34	4714	4730
Tu.	18	16. 25	16. 20	60. 16	59. 56	4752	4776
W.	19	16. 14	16. 7	59. 34	59. 10	4803	4832
Th.	20	16. 1	15. 54	58. 46	58. 20	4861	4894
F.	21	15. 47	15. 40	57. 56	57. 31	4923	4955
Sa.	22	15. 34	15. 28	57. 8	56. 45	4984	5013
Sun.	23	15. 22	15. 17	56. 24	56. 4	5040	5066
M.	24	15. 12	15. 7	55. 47	55. 29	5088	5111
Tu.	25	15. 3	14. 59	55. 14	55. 0	5131	5149
W.	26	14. 56	14. 53	54. 47	54. 36	5166	5181
Th.	27	14. 50	14. 48	54. 26	54. 18	5194	5205
F.	28	14. 46	14. 44	54. 11	54. 5	5214	5222
Sa.	29	14. 43	14. 42	54. 0	53. 56	5229	5234
Sun.	30	14. 41	14. 41	53. 54	53. 53	5237	5238
M.	31	14. 41	14. 42	53. 54	53. 57	5237	5233

DISTANCES of the MOON's *Centre* from the SUN, and from STARS *EAST* of her.

Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
Antares.	2	86. 51. 22	85. 23. 32	83. 55. 46	82. 28. 3	81. 0. 25	79. 32. 50	78. 5. 18	76. 37. 50
	3	75. 10. 24	73. 43. 1	72. 15. 41	70. 48. 22	69. 21. 6	67. 53. 51	66. 26. 37	64. 59. 25
	4	63. 32. 13	62. 5. 2	60. 37. 50	59. 10. 39	57. 43. 28	56. 16. 17	54. 49. 5	53. 21. 52
	5	51. 54. 39	50. 27. 24	49. 0. 8	47. 32. 51	46. 5. 33	44. 38. 14	43. 10. 54	41. 43. 35
	6	40. 16. 16	38. 48. 59	37. 21. 43	35. 54. 29	34. 27. 18	- - -	- - -	- - -
α Aquilæ.	6	- - -	- - -	- - -	- - -	84. 47. 2	83. 24. 28	82. 1. 44	80. 38. 52
	7	79. 15. 52	77. 52. 44	76. 29. 28	75. 6. 4	73. 42. 34	72. 18. 56	70. 55. 11	69. 31. 22
	8	68. 7. 27	66. 43. 28	65. 19. 25	63. 55. 21	62. 31. 15	61. 7. 9	59. 43. 5	58. 19. 2
	9	56. 55. 3	- - -	- - -	- - -	- - -	- - -	- - -	- - -
Fomalhaut.	9	88. 27. 18	86. 58. 15	85. 28. 52	83. 59. 9	82. 29. 6	80. 58. 45	79. 28. 5	77. 57. 8
	10	76. 25. 54	74. 54. 23	73. 22. 37	71. 50. 36	70. 18. 23	68. 45. 56	67. 13. 19	65. 40. 33
	11	64. 7. 40	62. 34. 41	61. 1. 39	59. 28. 34	57. 55. 29	- - -	- - -	- - -
α Pegasi.	11	- - -	- - -	- - -	- - -	71. 40. 26	70. 1. 5	68. 21. 26	66. 41. 31
	12	65. 1. 23	63. 21. 4	61. 40. 35	59. 59. 59	58. 19. 19	56. 38. 33	54. 57. 49	53. 17. 6
	13	51. 36. 31	49. 56. 2	48. 15. 49	46. 35. 56	44. 56. 28	43. 17. 31	41. 39. 9	40. 1. 28
	14	38. 24. 33	- - -	- - -	- - -	- - -	- - -	- - -	- - -
α Arietis.	14	79. 34. 37	77. 45. 16	75. 55. 45	74. 6. 6	72. 16. 22	70. 26. 33	68. 36. 43	66. 46. 51
	15	64. 57. 1	63. 7. 13	61. 17. 30	59. 27. 55	57. 38. 28	55. 49. 11	54. 0. 8	52. 11. 22
	16	50. 22. 54	48. 34. 45	46. 47. 1	44. 59. 46	43. 13. 2	41. 26. 53	39. 41. 23	37. 56. 35
	17	36. 12. 33	- - -	- - -	- - -	- - -	- - -	- - -	- - -

Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
Aldebaran.	17	67. 10. 33	65. 18. 40	63. 27. 2	61. 35. 38	59. 44. 31	57. 53. 40	56. 3. 6	54. 12. 49
	18	52. 22. 51	50. 33. 12	48. 43. 51	46. 54. 51	45. 6. 10	43. 17. 50	41. 29. 51	39. 42. 14
	19	37. 54. 58	- - -	- - -	- - -	- - -	- - -	- - -	- - -
Pollux.	19	81. 44. 56	80. 0. 13	78. 15. 54	76. 31. 58	74. 48. 26	73. 5. 18	71. 22. 35	69. 40. 16
	20	67. 58. 22	66. 16. 53	64. 35. 50	62. 55. 12	61. 15. 1	59. 35. 17	57. 55. 59	56. 17. 9
	21	54. 38. 47	53. 0. 53	51. 23. 27	49. 46. 30	48. 10. 2	- - -	- - -	- - -
The Sun.	18	- - -	- - -	- - -	- - -	- - -	121. 39. 6	119. 58. 31	118. 18. 16
	19	116. 38. 22	114. 58. 50	113. 19. 39	111. 40. 49	110. 2. 22	108. 24. 17	106. 46. 35	105. 9. 14
	20	103. 32. 15	101. 55. 38	100. 19. 23	98. 43. 29	97. 7. 58	95. 32. 49	93. 58. 1	92. 23. 35
	21	90. 49. 30	89. 15. 46	87. 42. 23	86. 9. 20	84. 36. 38	83. 4. 16	81. 32. 13	80. 0. 29
	22	78. 29. 5	76. 58. 0	75. 27. 13	73. 56. 44	72. 26. 33	70. 56. 40	69. 27. 3	67. 57. 44
	23	66. 28. 41	64. 59. 54	63. 31. 23	62. 3. 6	60. 35. 6	59. 7. 20	57. 39. 48	56. 12. 30
	24	54. 45. 27	53. 18. 37	51. 51. 59	50. 25. 34	48. 59. 22	47. 33. 22	46. 7. 33	44. 41. 56
	25	43. 16. 30	41. 51. 15	40. 26. 11	39. 1. 17	- - -	- - -	- - -	- - -
Antares.	30	- - -	- - -	- - -	- - -	72. 29. 56	71. 2. 37	69. 35. 19	68. 8. 3
	31	66. 40. 50	65. 13. 39	63. 46. 29	62. 19. 21	60. 52. 13	59. 25. 7	57. 58. 3	56. 31. 0
	S.1	55. 3. 58	- - -	- - -	- - -	- - -	- - -	- - -	- - -

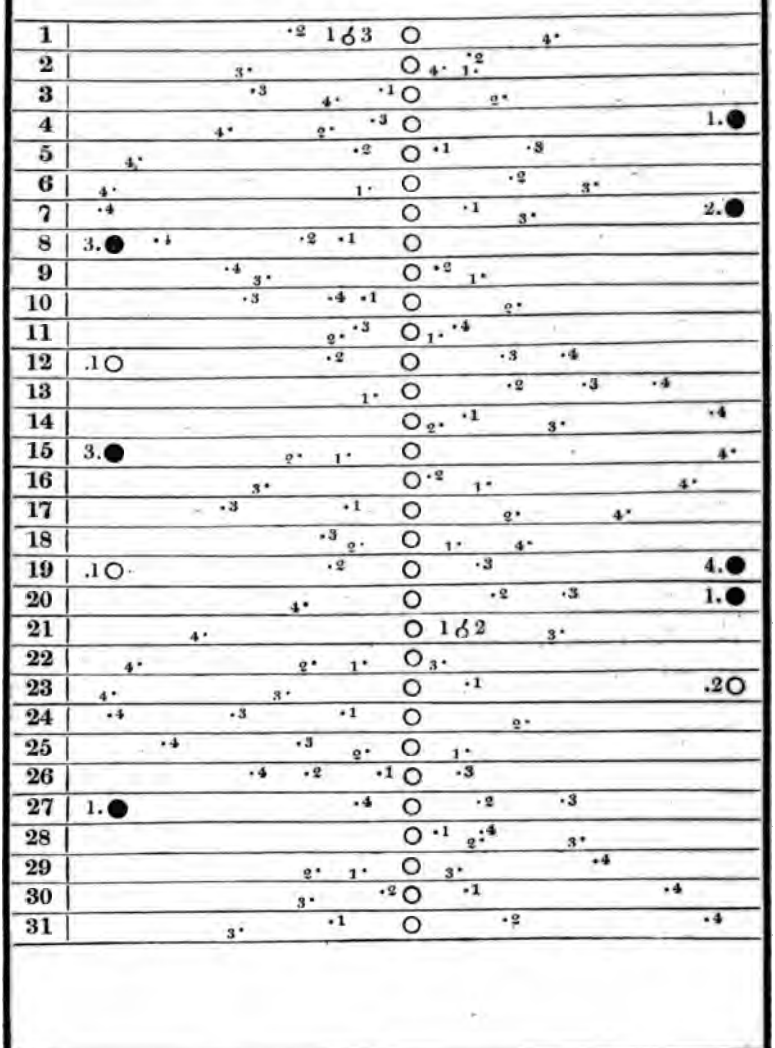
DISTANCES of the Moon's *Centre* from the Sun, and from Stars *WEST* of her.

Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
The Sun.	2	- - -	- - -	- - -	- - -	- - -	- - -	38. 42. 34	40. 3. 35
	3	41. 24. 35	42. 45. 35	44. 6. 36	45. 27. 37	46. 48. 39	48. 9. 41	49. 30. 46	50. 51. 52
	4	52. 13. 1	53. 34. 12	54. 55. 26	56. 16. 43	57. 38. 4	58. 59. 28	60. 20. 58	61. 42. 33
	5	63. 4. 13	64. 25. 59	65. 47. 52	67. 9. 53	68. 32. 2	69. 54. 18	71. 16. 44	72. 39. 18
	6	74. 2. 2	75. 24. 56	76. 48. 1	78. 11. 18	79. 34. 46	80. 58. 27	82. 22. 21	83. 46. 30
	7	85. 10. 52	86. 35. 28	88. 0. 20	89. 25. 29	90. 50. 52	92. 16. 33	93. 42. 33	95. 8. 49
	8	96. 35. 24	98. 2. 17	99. 29. 31	100. 57. 5	102. 24. 59	103. 53. 14	105. 21. 52	106. 50. 51
	9	108. 20. 12	109. 49. 55	111. 20. 3	112. 50. 33	114. 21. 27	115. 52. 45	117. 24. 28	118. 56. 37
	10	120. 29. 10	- - -	- - -	- - -	- - -	- - -	- - -	- - -
Spica ♍.	7	- - -	- - -	- - -	- - -	25. 10. 7	26. 42. 1	28. 14. 18	29. 46. 58
	8	31. 20. 2	32. 53. 29	34. 27. 20	36. 1. 34	37. 36. 12	39. 11. 14	40. 46. 38	42. 22. 28
	9	43. 58. 41	45. 35. 19	47. 12. 21	48. 49. 49	50. 27. 42	52. 6. 0	53. 44. 44	55. 23. 54
	10	57. 3. 30	58. 43. 32	60. 24. 1	62. 4. 56	63. 46. 18	65. 28. 7	67. 10. 22	68. 53. 4
	11	70. 36. 12	72. 19. 47	74. 3. 48	75. 48. 16	77. 33. 10	- - -	- - -	- - -
Antares.	11	- - -	- - -	- - -	- - -	32. 47. 56	34. 28. 55	36. 10. 39	37. 53. 8
	12	39. 36. 18	41. 20. 8	43. 4. 37	44. 49. 41	46. 35. 19	48. 21. 28	50. 8. 8	51. 55. 17
	13	53. 42. 53	55. 30. 54	57. 19. 19	59. 8. 7	60. 57. 17	62. 46. 48	64. 36. 38	66. 26. 46
	14	68. 17. 10	70. 7. 49	71. 58. 42	73. 49. 47	75. 41. 4	77. 32. 31	79. 24. 6	81. 15. 48
	15	83. 7. 36	84. 59. 28	86. 51. 24	88. 43. 21	90. 35. 18	92. 27. 14	94. 19. 9	96. 10. 59
	16	98. 2. 45	99. 54. 24	101. 45. 56	103. 37. 19	105. 28. 32	- - -	- - -	- - -

Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
	16	- - -	- - -	- - -	- - -	58. 26. 0	60. 4. 23	61. 43. 5	63. 22. 3
α Aquilæ.	17	65. 1. 14	66. 40. 36	68. 20. 5	69. 59. 40	71. 39. 16	73. 18. 51	74. 58. 22	76. 37. 49
	18	78. 17. 9	79. 56. 20	81. 35. 21	83. 14. 9	84. 52. 41	- - -	- - -	- - -
	18	- - -	- - -	- - -	- - -	53. 0. 57	54. 35. 15	56. 9. 47	57. 44. 30
Fomalhaut.	19	59. 19. 22	60. 54. 20	62. 29. 23	64. 4. 27	65. 39. 30	67. 14. 28	68. 49. 22	70. 24. 9
	20	71. 58. 49	73. 33. 19	75. 7. 39	76. 41. 47	78. 15. 40	- - -	- - -	- - -
	20	- - -	- - -	- - -	- - -	62. 52. 10	64. 27. 56	66. 3. 32	67. 38. 57
α Pegasi.	21	69. 14. 11	70. 49. 13	72. 24. 3	73. 58. 40	75. 33. 3	77. 7. 12	78. 41. 7	80. 14. 47
	22	81. 48. 12	83. 21. 22	84. 54. 16	86. 26. 55	87. 59. 17	- - -	- - -	- - -
	22	- - -	- - -	- - -	- - -	44. 21. 43	45. 53. 53	47. 26. 2	48. 58. 8
α Arietis.	23	50. 30. 11	52. 2. 10	53. 34. 5	55. 5. 54	56. 37. 38	58. 9. 14	59. 40. 44	61. 12. 7
	24	62. 43. 22	64. 14. 30	65. 45. 30	67. 16. 22	68. 47. 6	70. 17. 42	71. 48. 9	73. 18. 29
	25	74. 48. 40	76. 18. 43	77. 48. 38	79. 18. 25	80. 48. 4	- - -	- - -	- - -

CONFIGURATIONS of the SATELLITES of JUPITER,

At ½ an Hour past VIII o'Clock in the *Evening*.



Days of the Week.	Days of the Month.	*Sundays, and other remarkable Days.*
Tu.	1	Giles.
W.	2	London burnt, 1666, O.S.
Th.	3	
F.	4	
Sa.	5	
Sun.	6	*12th Sunday after Trinity.*
M.	7	Enurchus.
Tu.	8	Nat. of B.V. Mary.
W.	9	
Th.	10	
F.	11	
Sa.	12	
Sun.	13	*13th Sunday after Trinity.*
M.	14	Holy Cross.
Tu.	15	
W.	16	
Th.	17	Lambert.
F.	18	
Sa.	19	
Sun.	20	*14th Sunday after Trinity.*
M.	21	*St. Matthew.*
Tu.	22	
W.	23	
Th.	24	
F.	25	
Sa.	26	St. Cyprian.
Sun.	27	*15th Sunday after Trinity.*
M.	28	
Tu.	29	*St. Michael. Q. of Wirt. b.*
W.	30	St. Jerome.

Phases of the MOON.

	D.	H.	M.
☽ *First Quarter* . . .	6.	0.	0
○ Full Moon . . .	12.	18.	29
☾ *Last Quarter* . . .	19.	12.	6
● New Moon	27.	14.	3

Other *Phenomena.*

D.	H.	M.	
1.	7.	-	☽ ☿ ♍.
2.	15.	-	☽ ☌ ♍.
4.	7.	-	☿ ☍ ♍.
4.	8.	-	☽ ♈ ♎.
4.	17.	-	☽ ☿ ♎.
5.	10.	-	☽ ☌ Oph.
9.	8.	-	☿ ☊ ♍.
9.	13.	-	☽ ☍ ♑.
11.	12.	-	☽ ☿ ♒.
12.	-.	-	☽ eclipsed, partly vis.
15.	2.	-	☽ ☌ ♓.
17.	19.	-	☽ ♈ ♉.
17.	20.	-	☽ 1 ☌ ♉.
17.	20.	-	☽ 2 ☌ ♉.
18.	1.	-	☽ ☌ ♉.
20.	8.	-	☌ ☍ ☊.
21.	16.	-	☿ ☌ ♍.
22.	20.	17	☉ enters ♎.
23.	18.	-	☽ ☐ ☊.
23.	23.	-	☽ ☌ ☊.
24.	8.	-	♀ ☍ ♍.
24.	9.	-	☽ ☍ ☊.
26.	7.	-	☽ △ ☊.
26.	19.	-	☽ ☍ ♍.
27.	-.	-	☉ eclipsed, invisible.
28.	13.	-	☽ ☿ ♍.
29.	21.	-	☽ ☌ ♍.

Days of the Week.	Days of the Month.	The SUN's Longitude.	Rt. Ascen. in Time.	Declin. North.	Diff.	Equation of Time. Sub. from app. Time.	Diff.
		S. D. M. S.	H. M. S.	D. M. S.	M. S	M. S.	S.
Tu.	1	5. 8. 43. 14	10. 41. 21, 5	8. 18. 25	21. 52	0. 9, 4	18, 8
W.	2	5. 9. 41. 24	10. 44. 59, 2	7. 56. 33	21. 59	0. 28, 2	19, 1
Th.	3	5. 10. 39. 35	10. 48. 36, 7	7. 34. 34	22. 7	0. 47, 3	19, 3
F.	4	5. 11. 37. 47	10. 52. 13, 8	7. 12. 27	22. 13	1. 6, 6	19, 6
Sa.	5	5. 12. 36. 1	10. 55. 50, 7	6. 50. 14	22. 21	1. 26, 2	19, 9
Sun.	6	5. 13. 34. 16	10. 59. 27, 4	6. 27. 53	22. 26	1. 46, 1	20, 0
M.	7	5. 14. 32. 32	11. 3. 3, 8	6. 5. 27	22. 33	2. 6, 1	20, 3
Tu.	8	5. 15. 30. 51	11. 6. 40, 0	5. 42. 54	22. 38	2. 26, 4	20, 4
W.	9	5. 16. 29. 10	11. 10. 16, 1	5. 20. 16	22. 43	2. 46, 8	20, 7
Th.	10	5. 17. 27. 32	11. 13. 52, 0	4. 57. 33	22. 49	3. 7, 5	20, 8
F.	11	5. 18. 25. 54	11. 17. 27, 7	4. 34. 44	22. 53	3. 28, 3	20, 9
Sa.	12	5. 19. 24. 19	11. 21. 3, 3	4. 11. 51	22. 57	3. 49, 2	21, 0
Sun.	13	5. 20. 22. 45	11. 24. 38, 7	3. 48. 54	23. 2	4. 10, 2	21, 1
M.	14	5. 21. 21. 13	11. 28. 14, 1	3. 25. 52	23. 6	4. 31, 3	21, 1
Tu.	15	5. 22. 19. 44	11. 31. 49, 5	3. 2. 46	23. 9	4. 52, 4	21, 2
W.	16	5. 23. 18. 16	11. 35. 24, 8	2. 39. 37	23. 12	5. 13, 6	21, 1
Th.	17	5. 24. 16. 51	11. 39. 0, 2	2. 16. 25	23. 15	5. 34, 7	21, 2
F.	18	5. 25. 15. 28	11. 42. 35, 5	1. 53. 10	23. 18	5. 55, 9	21, 0
Sa.	19	5. 26. 14. 7	11. 46. 11, 0	1. 29. 52	23. 20	6. 16, 9	21, 1
Sun.	20	5. 27. 12, 48	11. 49. 46, 4	1. 6. 32	23. 22	6. 38, 0	20, 9
M.	21	5. 28. 11. 32	11. 53. 22, 0	0. 43. 10	23. 23	6. 58, 9	20, 8
Tu.	22	5. 29. 10. 18	11. 56. 57, 6	0. 19. 47 *South.*	23. 25	7. 19, 7	20, 7
W.	23	6. 0. 9. 7	12. 0. 33, 4	0. 3. 38	23. 25	7. 40, 4	20, 6
Th.	24	6. 1. 7. 57	12. 4. 9, 4	0. 27. 3	23. 26	8. 1, 0	20, 4
F.	25	6. 2. 6. 50	12. 7. 45, 5	0. 50. 29	23. 26	8. 21, 4	20, 3
Sa.	26	6. 3. 5. 45	12. 11. 21, 7	1. 13. 55	23. 26	8. 41, 7	20, 0
Sun.	27	6. 4. 4. 42	12. 14. 58, 2	1. 37. 21	23. 25	9. 1, 7	19, 8
M.	28	6. 5. 3. 42	12. 18. 34, 8	2. 0. 46	23. 24	9. 21, 5	19, 6
Tu.	29	6. 6. 2. 43	12. 22. 11, 7	2. 24. 10	23. 23	9. 41, 1	19, 4
W.	30	6. 7. 1. 46	12. 25. 48, 9	2. 47. 33	23. 21	10. 0, 5	19, 1

Days	Time of ⊙'s Semidiam. passing Merid.	THE SUN's Semi-diameter.	Hourly Motion.	Logar. Distance.	Place of the ☽'s Node.
	M. S.	M. S.	M. S.		S. D. M.
1	1. 4, 2	15. 53, 3	2. 25, 3	0. 003696	5. 29. 27
7	1. 3, 9	15. 54, 7	2. 25, 8	0. 003021	5. 29. 8
13	1. 3, 8	15. 56, 2	2. 26, 2	0. 002318	5. 28. 49
19	1. 3, 8	15. 57, 8	2. 26, 7	0. 001612	5. 28. 30
25	1. 3, 9	15. 59, 4	2. 27, 2	0. 000891	5. 28. 11

ECLIPSES OF THE SATELLITES OF JUPITER.

MEAN TIME.

I. Satellite. *Emersions.*		II. Satellite.		III. Satellite.	
Days.	H. M. S.	Days.	H. M. S.	Days.	H. M. S.
1	18. 25. 33	1	7. 3. 47 Im.	5	22. 30. 45 Im.
3	12. 54. 21	1	9. 33. 26 E.	6	1. 8. 44 E.
* 5	7. 23. 5	4	20. 22. 28 Im.	13	2. 29. 42 Im.
7	1. 51. 53	4	22. 52. 14 E.	13	5. 8. 37 E.
8	20. 20. 36		*Emersions.*	20	6. 28. 59 Im.
10	14. 49. 24	8	12. 10. 30	20	9. 8. 49 E.
12	9. 18. 7	12	1. 29. 25	27	10. 28. 18 Im.
14	3. 46. 54	15	14. 47. 44	27	13. 8. 57 E.
15	22. 15. 37	19	4. 6. 45		
17	16. 44. 23	22	17. 25. 4		
19	11. 13. 5	*26	6. 44. 11		
21	5. 41. 52	29	20. 2. 30		
23	0. 10. 34				
24	18. 39. 20				
26	13. 8. 2			IV. Satellite.	
28	7. 36. 47				
30	2. 5. 29				

Days	THE PLANETS' Heliocentric Long.	Lat.	Geocentric Long.	Lat.	Declin.	Rt. Asc. *in Time.*	Passage Merid.
	S. D. M.	D. M.	S. D. M.	D. M.	D. M.	H. M.	H. M.
	☿		*MERCURY.*				
1	6. 15. 18	3. 37 N	5. 19. 7	1. 6 N	5. 19 N	11. 22	0. 40
4	6. 25. 25	2. 30	5. 24. 18	0. 48	3. 0	11. 40	0. 48
7	7. 4. 55	1. 23	5. 29. 17	0. 28	0. 42 N	11. 58	0. 55
10	7. 13. 56	0. 17 N	6. 4. 6	0. 6 N	1. 32 S	12. 15	1. 1
13	7. 22. 35	0. 46 S	6. 8. 46	0. 16 S	3. 44	12. 32	1. 7
16	8. 1. 1	1. 47	6. 13. 15	0. 40	5. 51	12. 48	1. 12
19	8. 9. 17	2. 45	6. 17. 35	1. 3	7. 52	13. 3	1. 17
22	8. 17. 31	3. 39	6. 21. 45	1. 26	9. 48	13. 18	1. 21
25	8. 25. 48	4. 28	6. 25. 43	1. 48	11. 38	13. 33	1. 25
28	9. 4. 14	5. 12	6. 29. 29	2. 10	13. 19	13. 47	1. 28
30	9. 9. 58	5. 39	7. 1. 52	2. 23	14. 22	13. 55	1. 30
	♀		*VENUS.*				
1	7. 17. 5	1. 36 N	6. 6. 32	0. 48 N	1. 51 S	12. 25	1. 44
7	7. 26. 39	1. 5	6. 13. 50	0. 33	4. 57	12. 52	1. 49
13	8. 6. 12	0. 32 N	6. 21. 7	0. 17 N	7. 59	13. 18	1. 54
19	8. 15. 44	0. 2 S	6. 28. 23	0. 1 S	10. 56	13. 45	1. 59
25	8. 25. 14	0. 36	7. 5. 39	0. 20	13. 44	14. 13	2. 5
	♂		*MARS.*				
1	5. 1. 40	1. 48 N	5. 4. 19	1. 7 N	10. 59 N	10. 26	23. 44
7	5. 4. 17	1. 47	5. 8. 9	1. 7	9. 33	10. 41	23. 37
13	5. 6. 54	1. 45	5. 11. 58	1. 6	8. 6	10. 55	23. 29
19	5. 9. 31	1. 43	5. 15. 48	1. 5	6. 36	11. 9	23. 22
25	5. 12. 9	1. 42	5. 19. 38	1. 4	5. 6	11. 24	23. 15
	♃		*JUPITER.*				
1	8. 17. 45	0. 28 N	8. 6. 46	0. 29 N	20. 59 S	16. 20	5. 38
7	8. 18. 14	0. 28	8. 7. 20	0. 27	21. 6	16. 22	5. 19
13	8. 18. 43	0. 27	8. 8. 0	0. 26	21. 14	16. 25	5. 0
19	8. 19. 11	0. 26	8. 8. 45	0. 25	21. 22	16. 28	4. 42
25	8. 19. 40	0. 26	8. 9. 35	0. 24	21. 30	16. 32	4. 24
	♄		*SATURN.*				
1	4. 9. 6	0. 44 N	4. 11. 57	0. 40 N	17. 51 N	8. 58	22. 14
7	4. 9. 19	0. 44	4. 12. 40	0. 40	17. 40	9. 1	21. 55
13	4. 9. 32	0. 45	4. 13. 21	0. 41	17. 29	9. 4	21. 37
19	4. 9. 46	0. 45	4. 14. 0	0. 42	17. 18	9. 7	21. 18
25	4. 9. 59	0. 46	4. 14. 37	0. 43	17. 8	9. 9	20. 59
	♅		*GEORGIAN.*				
1	10. 4. 48	0. 36 S	10. 3. 6	0. 38 S	20. 6 S	20. 22	9. 39
11	10. 4. 54	0. 36	10. 2. 50	0. 38	20. 9	20. 21	9. 2
21	10. 5. 1	0. 36	10. 2. 37	0. 38	20. 12	20. 20	8. 26

Days of the Week.	Days of the Month.	THE MOON's Longitude. *Noon.* S. D. M. S.	Longitude. *Midnight.* S. D. M. S.	Latitude. *Noon.* D. M. S.	Latitude. *Midnight.* D. M. S.
Tu.	1	6. 12. 34. 41	6. 18. 29. 6	1. 16. 59 N	1. 48. 14 N
W.	2	6. 24. 24. 47	7. 0. 22. 9	2. 18. 27	2. 47. 19
Th.	3	7. 6. 21. 43	7. 12. 23. 58	3. 14. 31	3. 39. 47
F.	4	7. 18. 29. 27	7. 24. 38. 40	4. 2. 47	4. 23. 15
Sa.	5	8. 0. 52. 11	8. 7. 10. 30	4. 40. 52	4. 55. 20
Sun.	6	8. 13. 34. 8	8. 20. 3. 34	5. 6. 22	5. 13. 41
M.	7	8. 26. 39. 12	9. 3. 21. 21	5. 17. 1	5. 16. 8
Tu.	8	9. 10. 10. 16	9. 17. 6. 5	5. 10. 49	5. 0. 55
W.	9	9. 24. 8. 45	10. 1. 18. 6	4. 46. 22	4. 27. 9
Th.	10	10. 8. 33. 46	10. 15. 55. 14	4. 3. 23	3. 35. 17
F.	11	10. 23. 21. 47	11. 0. 52. 30	3. 3. 14	2. 27. 43
Sa.	12	11. 8. 26. 23	11. 16. 2. 18	1. 49. 20	1. 8. 50 N
Sun.	13	11. 23. 39. 1	0. 1. 15. 19	0. 27. 1 N	0. 15. 15 S
M.	14	0. 8. 50. 0	0. 16. 21. 56	0. 57. 7 S	1. 37. 43
Tu.	15	0. 23. 50. 5	1. 1. 13. 32	2. 16. 19	2. 52. 12
W.	16	1. 8. 31. 36	1. 15. 43. 43	3. 24. 49	3. 53. 43
Th.	17	1. 22. 49. 30	1. 29. 48. 43	4. 18. 34	4. 39. 10
F.	18	2. 6. 41. 19	2. 13. 27. 21	4. 55. 24	5. 7. 14
Sa.	19	2. 20. 7. 2	2. 26. 40. 38	5. 14. 44	5. 17. 58
Sun.	20	3. 3. 8. 31	3. 9. 31. 3	5. 17. 7	5. 12. 20
M.	21	3. 15. 48. 43	3. 22. 1. 58	5. 3. 52	4. 51. 53
Tu.	22	3. 28. 11. 17	4. 4. 17. 8	4. 36. 40	4. 18. 27
W.	23	4. 10. 20. 1	4. 16. 20. 21	3. 57. 29	3. 34. 3
Th.	24	4. 22. 18. 36	4. 28. 15. 8	3. 8. 24	2. 40. 49
F.	25	5. 4. 10. 23	5. 10. 4. 40	2. 11. 36	1. 41. 4
Sa.	26	5. 15. 58. 22	5. 21. 51. 47	1. 9. 30	0. 37. 13 S
Sun.	27	5. 27. 45. 12	6. 3. 38. 54	0. 4. 32 S	0. 28. 13 N
M.	28	6. 9. 33. 12	6. 15. 28. 19	1. 0. 42 N	1. 32. 36
Tu.	29	6. 21. 24. 33	6. 27. 22. 10	2. 3. 35	2. 33. 20
W.	30	7. 3. 21. 26	7. 9. 22. 37	3. 1. 31	3. 27. 48

Days of the Month.	Age.	Pass. Merid.	THE MOON's Right Ascension.		Declination.	
			Noon.	*Midnight.*	*Noon.*	*Midnight.*
	D.	H. M.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
1	5	2. 11	192. 4. 9	197. 44. 21	3. 47. 30 S	5. 34. 57 S
2	6	2. 54	203. 27. 38	209. 14. 58	7. 19. 24	8. 59. 52
3	7	3. 39	215. 7. 19	221. 5. 35	10. 35. 21	12. 4. 48
4	8	4. 25	227. 10. 36	233. 23. 4	13. 27. 9	14. 41. 16
5	9	5. 14	239. 43. 32	246. 12. 23	15. 46. 0	16. 40. 12
6	10	6. 5	252. 49. 47	259. 35. 38	17. 22. 42	17. 52. 21
7	11	6. 58	266. 29. 35	273. 31. 1	18. 8. 6	18. 8. 58
8	12	7. 54	280. 39. 2	287. 52. 35	17. 54. 12	17. 23. 17
9	13	8. 51	295. 10. 26	302. 31. 20	16. 35. 58	15. 32. 23
10	14	9. 48	309. 54. 2	317. 17. 26	14. 13. 4	12. 38. 58
11	15	10. 46	324. 40. 34	332. 2. 42	10. 51. 24	8. 52. 8
12	16	11. 43	339. 23. 22	346. 42. 20	6. 43. 18	4. 27. 15 S
13	17	12. 40	353. 59. 34	1. 15. 10	2. 6. 36 S	0. 15. 59 N
14	18	13. 36	8. 29. 20	15. 42. 19	2. 37. 47 N	4. 56. 11
15	19	14. 32	22. 54. 19	30. 5. 26	7. 8. 41	9. 13. 4
16	20	15. 28	37. 15. 42	44. 24. 57	11. 7. 20	12. 49. 52
17	21	16. 23	51. 32. 50	58. 38. 52	14. 19. 19	15. 34. 42
18	22	17. 18	65. 42. 27	72. 42. 51	16. 35. 23	17. 21. 2
19	23	18. 11	79. 39. 20	86. 31. 7	17. 51. 33	18. 7. 10
20	24	19. 3	93. 17. 32	99. 57. 58	18. 8. 17	17. 55. 28
21	25	19. 52	106. 32. 0	112. 59. 21	17. 29. 28	16. 51. 7
22	26	20. 40	119. 19. 54	125. 33. 44	16. 1. 18	15. 0. 58
23	27	21. 26	131. 41. 6	137. 42. 21	13. 51. 8	12. 32. 47
24	28	22. 10	143. 38. 2	149. 28. 45	11. 6. 54	9. 34. 31
25	29	22. 53	155. 15. 12	160. 58. 9	7. 56. 37	6. 14. 10
26	30	23. 36	166. 38. 27	172. 16. 57	4. 28. 10	2. 39. 37 N
27	1	♂	177. 54. 32	183. 32. 5	0. 49. 29 N	1. 1. 13 S
28	2	0. 19	189. 10. 30	194. 50. 41	2. 51. 29 S	4. 40. 19
29	3	1. 2	200. 33. 31	206. 19. 50	6. 26. 42	8. 9. 34
30	4	1. 46	212. 10. 24	218. 5. 56	9. 47. 52	11. 20. 35

Days of the Week.	Days of the Month.	The MOON's Semidiameter.		Hor. Parallax.		Proportional Logarithm.	
		Noon.	*Midnight.*	*Noon.*	*Midnight.*		
		M. S.	M. S.	M. S.	M. S.	*Noon.*	*Midn.*
Tu.	1	14. 43	14. 45	54. 1	54. 6	5227	5221
W.	2	14. 46	14. 49	54. 13	54. 23	5211	5198
Th.	3	14. 52	14. 56	54. 34	54. 47	5183	5166
F.	4	15. 0	15. 5	55. 3	55. 20	5145	5123
Sa.	5	15. 10	15. 16	55. 40	56. 1	5097	5070
Sun.	6	15. 22	15. 29	56. 25	56. 50	5039	5007
M.	7	15. 36	15. 44	57. 17	57. 45	4972	4937
Tu.	8	15. 52	16. 0	58. 14	58. 43	4901	4865
W.	9	16. 8	16. 15	59. 11	59. 39	4831	4797
Th.	10	16. 22	16. 29	60. 5	60. 28	4765	4738
F.	11	16. 34	16. 38	60. 48	61. 4	4714	4695
Sa.	12	16. 42	16. 44	61. 16	61. 23	4680	4672
Sun.	13	16. 44	16. 43	61. 25	61. 22	4670	4673
M.	14	16. 41	16. 38	61. 14	61. 1	4683	4698
Tu.	15	16. 33	16. 28	60. 44	60. 24	4718	4742
W.	16	16. 21	16. 14	60. 1	59. 35	4770	4801
Th.	17	16. 7	15. 59	59. 8	58. 39	4834	4870
F.	18	15. 51	15. 43	58. 10	57. 42	4906	4941
Sa.	19	15. 36	15. 29	57. 15	56. 48	4975	5009
Sun.	20	15. 22	15. 16	56. 23	56. 0	5041	5071
M.	21	15. 10	15. 4	55. 39	55. 19	5098	5124
Tu.	22	15. 0	14. 56	55. 2	54. 47	5146	5166
W.	23	14. 52	14. 49	54. 34	54. 23	5183	5198
Th.	24	14. 47	14. 45	54. 14	54. 7	5210	5219
F.	25	14. 43	14. 42	54. 1	53. 57	5227	5233
Sa.	26	14. 42	14. 41	53. 55	53. 54	5235	5237
Sun.	27	14. 41	14. 42	53. 54	53. 56	5237	5234
M.	28	14. 43	14. 44	53. 59	54. 3	5230	5225
Tu.	29	14. 45	14. 47	54. 9	54. 16	5217	5207
W.	30	14. 49	14. 52	54. 24	54. 34	5197	5183

DISTANCES of the Moon's *Centre* from the Sun, and from Stars *EAST* of her.

Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
Antares.	1	55. 3.58	53.36.59	52.10. 1	50.43. 3	49.16. 7	47.49.13	46.22.20	44.55.31
	2	43.28.44	42. 2. 0	40.35.20	39. 8.44	37.42.15	36.15.52	34.49.36	33.23.29
	3	31.57.30	- - -	- - -	- - -	- - -	- - -	- - -	- - -
α Aquilæ.	3	82.19.30	80.57.37	79.35.39	78.13.36	76.51.30	75.29.20	74. 7. 7	72.44.52
	4	71.22.34	70. 0.13	68.37.52	67.15.30	65.53. 8	64.30.47	63. 8.27	61.46.11
	5	60.24. 0	59. 1.54	57.39.55	56.18. 3	54.56.20	- - -	- - -	- - -
Fomalhaut.	5	- - -	- - -	- - -	- - -	86.28.19	85. 1. 8	83.33.42	82. 5.59
	6	80.38. 1	79. 9.48	77.41.21	76.12.40	74.43.46	73.14.38	71.45.18	70.15.47
	7	68.46. 5	67.16.13	65.46.12	64.16. 4	62.45.51	61.15.31	59.45. 9	58.14.47
	8	56.44.28	55.14.13	53.44. 5	52.14. 6	50.44.18	- - -	- - -	- - -
α Pegasi.	8	- - -	- - -	- - -	- - -	63.51.14	62.13.34	60.35.39	58.57.33
	9	57.19.18	55.40.58	54. 2.34	52.24.11	50.45.51	49. 7.31	47.29.23	45.51.30
	10	44.13.57	42.36.50	41. 0.13	39.24.12	37.48.51	- - -	- - -	- - -
α Arietis.	10	- - -	- - -	- - -	- - -	78.54.57	77. 6.44	75.18.14	73.29.28
	11	71.40.27	69.51.14	68. 1.49	66.12.15	64.22.34	62.32.45	60.42.53	58.52.58
	12	57. 3. 4	55.13.10	53.23.22	51.33.41	49.44.12	47.54.53	46. 5.52	44.17.14
	13	42.29. 1	40.41.18	38.54.10	37. 7.40	35.21.53	- - -	- - -	- - -

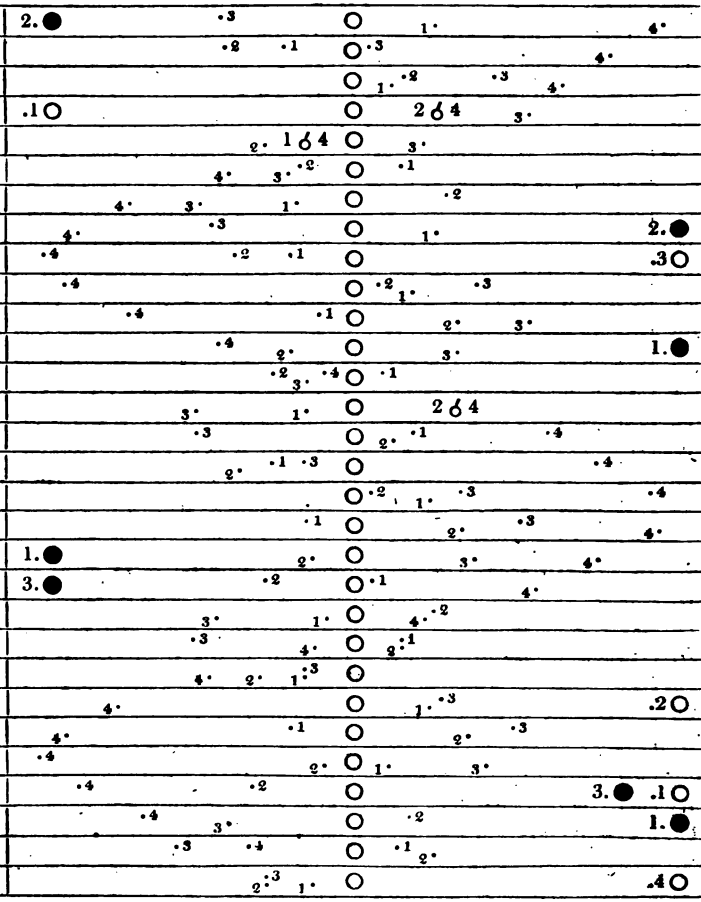
Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
Aldebaran.	13	- - -	- - -	- - -	- - -	66. 14. 38	64. 20. 17	62. 26. 4	60. 31. 59
	14	58. 38. 5	56. 44. 22	54. 50. 50	52. 57. 32	51. 4. 28	49. 11. 40	47. 19. 8	45. 26. 53
	15	43. 34. 57	41. 43. 21	39. 52. 4	38. 1. 8	36. 10. 33	34. 20. 20	32. 30. 30	30. 41. 3
	16	28. 52. 0	- - -	- - -	- - -	- - -	- - -	- - -	- - -
Pollux.	16	72. 54. 24	71. 8. 10	69. 22. 24	67. 37. 5	65. 52. 15	64. 7. 54	62. 24. 3	60. 40. 43
	17	58. 57. 54	57. 15. 37	55. 33. 52	53. 52. 40	52. 12. 3	50. 32. 0	48. 52. 32	47. 13. 42
	18	45. 35. 29	43. 57. 53	42. 20. 58	40. 44. 45	39. 9. 16	37. 34. 29	36. 0. 30	34. 27. 24
	19	32. 55. 12	31. 23. 59	29. 53. 47	28. 24. 40	26. 56. 41	- - -	- - -	- - -
The Sun.	17	121. 21. 24	119. 43. 26	118. 5. 55	116. 28. 49	114. 52. 10	113. 15. 57	111. 40. 10	110. 4. 48
	18	108. 29. 53	106. 55. 24	105. 21. 20	103. 47. 41	102. 14. 27	100. 41. 38	99. 9. 12	97. 37. 10
	19	96. 5. 32	94. 34. 18	93. 3. 26	91. 32. 56	90. 2. 49	88. 33. 3	87. 3. 37	85. 34. 32
	20	84. 5. 48	82. 37. 24	81. 9. 19	79. 41. 32	78. 14. 5	76. 46. 55	75. 20. 2	73. 53. 25
	21	72. 27. 5	71. 1. 1	69. 35. 12	68. 9. 37	66. 44. 18	65. 19. 12	63. 54. 19	62. 29. 38
	22	61. 5. 11	59. 46. 56	58. 16. 52	56. 52. 59	55. 29. 17	54. 5. 45	52. 42. 21	51. 19. 6
	23	49. 56. 1	48. 33. 5	47. 10. 15	45. 47. 34	44. 25. 0	43. 2. 33	41. 40. 11	40. 17. 55
α Aquilæ.	29	- - -	- - -	- - -	- - -	90. 29. 48	89. 8. 11	87. 46. 31	86. 24. 46
	30	85. 2. 57	83. 41. 5	82. 19. 10	80. 57. 13	79. 35. 14	78. 13. 13	76. 51. 10	75. 29. 7
	O.1	74. 7. 4	- - -	- - -	- - -	- - -	- - -	- - -	- - -

DISTANCES of the MOON'S *Centre* from the SUN, and from STARS *WEST* of her.

Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
The Sun.	1	- - -	- - -	- - -	- - -	39. 18. 52	40. 40. 35	42. 2. 22	43. 24. 15
	2	44. 46. 12	46. 8. 15	47. 30. 24	48. 52. 41	50. 15. 3	51. 37. 33	53. 0. 11	54. 22. 58
	3	55. 45. 53	57. 8. 56	58. 32. 10	59. 55. 34	61. 19. 8	62. 42. 53	64. 6. 50	65. 30. 59
	4	66. 55. 20	68. 19. 53	69. 44. 40	71. 9. 41	72. 34. 56	74. 0. 26	75. 26. 13	76. 52. 15
	5	78. 18. 33	79. 45. 8	81. 12. 1	82. 39. 12	84. 6. 40	85. 34. 28	87. 2. 36	88. 31. 4
	6	89. 59. 52	91. 29. 1	92. 58. 32	94. 28. 25	95. 58. 40	97. 29. 18	99. 0. 19	100. 31. 44
	7	102. 3. 32	103. 35. 44	105. 8. 22	106. 41. 24	108. 14. 51	109. 48. 44	111. 23. 3	112. 57. 47
	8	114. 32. 58	116. 8. 35	117. 44. 39	119. 21. 10	120. 58. 8	- - -	- - -	- - -
Spica ♍.	6	52. 32. 36	54. 8. 39	55. 45. 4	57. 21. 53	58. 59. 4	60. 36. 39	62. 14. 37	63. 53. 0
	7	65. 31. 47	67. 10. 58	68. 50. 35	70. 30. 37	72. 11. 3	73. 51. 55	75. 33. 15	77. 15. 0
	8	78. 57. 12	- - -	- - -	- - -	- - -	- - -	- - -	- - -
Antares.	8	34. 9. 44	35. 48. 20	37. 27. 41	39. 7. 44	40. 48. 28	42. 29. 53	44. 11. 56	45. 54. 36
	9	47. 37. 53	49. 21. 43	51. 6. 8	52. 51. 4	54. 36. 33	56. 22. 32	58. 9. 1	59. 55. 58
	10	61. 43. 24	63. 31. 17	65. 19. 36	67. 8. 20	68. 57. 28	70. 47. 0	72. 36. 53	74. 27. 8
	11	76. 17. 42	78. 8. 35	79. 59. 46	81. 51. 13	83. 42. 55	85. 34. 52	87. 27. 1	89 19. 21
	12	91. 11. 52	93. 4. 31	94. 57. 18	96. 50. 10	98. 43. 7	100. 36. 6	102. 29. 7	104. 22. 8
	13	106. 15. 7	- - -	- - -	- - -	- - -	- - -	- - -	- - -

Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
α Aquilæ.	13	59. 8. 11	60. 48. 35	62. 29. 24	64. 10. 37	65. 52. 8	67. 33. 56	69. 15. 57	70. 58. 7
	14	72. 40. 25	74. 22. 46	76. 5. 8	77. 47. 27	79. 29. 41	- - -	- - -	- - -
Fomalhaut.	14	- - -	- - -	- - -	- - -	47. 52. 24	49. 28. 8	51. 4. 27	52. 41. 14
	15	54. 18. 28	55. 56. 3	57. 33. 56	59. 12. 2	60. 50. 18	62. 28. 36	64. 6. 56	65. 45. 17
	16	67. 23. 35	69. 1. 47	70. 39. 52	72. 17. 45	73. 55. 25	- - -	- - -	- - -
α Pegasi.	16	- - -	- - -	- - -	- - -	58. 30. 25	60. 9. 47	61. 48. 58	63. 27. 59
	17	65. 6. 48	66. 45. 24	68. 23. 45	70. 1. 51	71. 39. 41	73. 17. 12	74. 54. 25	76. 31. 20
	18	78. 7. 55	79. 44. 10	81. 20. 4	82. 55. 37	84. 30. 48	- - -	- - -	- - -
α Arietis.	18	- - -	- - -	- - -	- - -	40. 54. 16	42. 28. 27	44. 2. 33	45. 36. 36
	19	47. 10. 32	48. 44. 22	50. 18. 4	51. 51. 37	53. 25. 1	54. 58. 13	56. 31. 14	58. 4. 3
	20	59. 36. 40	61. 9. 4	62. 41. 15	64. 13. 14	65. 45. 0	67. 16. 33	68. 47. 53	70. 19. 1
	21	71. 49. 56	73. 20. 39	74. 51. 9	76. 21. 28	77. 51. 34	- - -	- - -	- - -
Aldebaran.	21	- - -	- - -	- - -	- - -	44. 26. 5	45. 58. 29	47. 30. 41	49. 2. 40
	22	50. 34. 25	52. 5. 59	53. 37. 22	55. 8. 34	56. 39. 35	58. 10. 27	59. 41. 9	61. 11. 43
	23	62. 42. 7	64. 12. 22	65. 42. 30	67. 12. 31	68. 42. 24	70. 12. 11	71. 41. 53	73. 11. 28
	24	74. 40. 57	76. 10. 21	77. 39. 40	79. 8. 54	80. 38. 4	- - -	- - -	- - -

CONFIGURATIONS of the SATELLITES of JUPITER, at ½ an Hour past VII o'Clock in the *Evening*.



Days of the Week.	Days of the Month.	*Sundays, and other remarkable Days.*
Th.	1	Remigius.
F.	2	
Sa.	3	
Sun.	4	*16th Sunday after Trinity.*
M.	5	
Tu.	6	Faith.
W.	7	
Th.	8	
F.	9	St. Denys.
Sa.	10	Oxf. and Camb. T. beg.
Sun.	11	*17th Sunday after Trinity.*
M.	12	
Tu.	13	Transl. of K. Edw. Conf.
W.	14	
Th.	15	
F.	16	
Sa.	17	Ethelreda.
Sun.	18	*18th Sunday after Trinity.*
M.	19	[*St. Luke.*
Tu.	20	
W.	21	
Th.	22	
F.	23	
Sa.	24	
Sun.	25	*19th Sunday after Trinity.*
M.	26	[Crispin.
Tu.	27	
W.	28	*St. Simon and St. Jude.*
Th.	29	
F.	30	
Sa.	31	

Phases of the MOON.

	D.	H.	M.
☽ *First Quarter* . .	5.	11.	49
○ Full Moon	12.	3.	29
☾ *Last Quarter* . .	19.	2.	30
● New Moon . . .	27.	7.	44

Other *Phenomena.*

D.	H.	M.	
1.	2.	-	☿ ☌ ♂ ♎.
1.	14.	-	☽ ☌ ♎.
1.	23.	-	☽ ☉ ♎.
2.	15.	-	♂ ☍ ♏.
2.	17.	-	☽ ☌ Oph.
6.	22.	-	☽ ☍ ♑.
8.	22.	-	☽ ☉ ♒.
11.	14.	-	☿ ☌ ♎.
12.	-	-	♅ Stationary.
12.	13.	-	☽ ☌ ♓.
13.	21.	-	☿ ☌ ♎.
15.	4.	-	☽ ☌ ♉.
15.	5.	-	☽ ☐ ♂ ♉.
15.	5.	-	♂ ☌ ♏.
15.	6.	-	☽ ☐ ♂ ♉.
15.	6.	-	☿ ☌ ♏.
15.	11.	-	☽ ☍ ♉.
17.	-	-	☿ Stationary.
21.	0.	-	☽ ☍ ☊.
21.	5	-	☽ ☌ ☊.
23.	4.	29	☉ enters ♏.
23.	13.	-	☽ ☐ ☊.
24.	1.	-	☽ ☍ ♏.
24.	17.	-	☽ ☌ ♏.
25.	5.	-	☽ ☍ ♂.
25.	19.	-	☽ ☉ ♏.
28.	20.	-	☽ ☌ ♎.
29.	5.	-	☽ ☉ ♎.
29.	22.	-	☽ ☌ Oph.
31.	8.	-	☿ ☉ Oph.

Days of the Week.	Days of the Month.	THE SUN's Longitude.	Rt. Ascen. *in Time.*	Declin. *South.*	Diff.	Equation of Time. *Sub. from app. Time.*	Diff.
		S. D. M. S.	H. M. S.	D. M. S.	M. S.	M. S.	S.
Th.	1	6. 8. 0. 51	12. 29. 26, 3	3. 10. 54	23. 19	10. 19, 6	18, 8
F.	2	6. 8. 59. 58	12. 33. 3, 9	3. 34. 13	23. 17	10. 38, 4	18, 5
Sa.	3	6. 9. 59. 7	12. 36. 41, 9	3. 57. 30	23. 13	10. 56, 9	18, 2
Sun.	4	6. 10. 58. 18	12. 40. 20, 2	4. 20. 43	23. 10	11. 15, 1	17, 9
M.	5	6. 11. 57. 30	12. 43. 58, 8	4. 43. 53	23. 7	11. 33, 0	17, 5
Tu.	6	6. 12. 56. 44	12. 47. 37, 8	5. 7. 0	23. 3	11. 50, 5	17, 2
W.	7	6. 13. 56. 0	12. 51. 17, 1	5. 30. 3	22. 58	12. 7, 7	16, 8
Th.	8	6. 14. 55. 18	12. 54. 56, 9	5. 53. 1	22. 54	12. 24, 5	16, 4
F.	9	6. 15. 54. 37	12. 58. 37, 0	6. 15. 55	22. 49	12. 40, 9	15, 9
Sa.	10	6. 16. 53. 58	13. 2. 17, 6	6. 38. 44	22. 43	12. 56, 8	15, 5
Sun.	11	6. 17. 53. 21	13. 5. 58, 6	7. 1. 27	22. 37	13. 12, 3	15, 0
M.	12	6. 18. 52. 46	13. 9. 40, 1	7. 24. 4	22. 32	13. 27, 3	14, 5
Tu.	13	6. 19. 52. 13	13. 13. 22, 2	7. 46. 36	22. 25	13. 41, 8	13, 9
W.	14	6. 20. 51. 43	13. 17. 4, 7	8. 9. 1	22. 18	13. 55, 7	13, 4
Th.	15	6. 21. 51. 14	13. 20. 47, 8	8. 31. 19	22. 11	14. 9, 1	12, 9
F.	16	6. 22. 50. 48	13. 24. 31, 5	8. 53. 30	22. 4	14. 22, 0	12, 2
Sa.	17	6. 23. 50. 24	13. 28. 15, 8	9. 15. 34	21. 56	14. 34, 2	11, 6
Sun.	18	6. 24. 50. 3	13. 32. 0, 7	9. 37. 30	21. 47	14. 45, 8	11, 0
M.	19	6. 25. 49. 43	13. 35. 46, 2	9. 59. 17	21. 39	14. 56, 8	10, 3
Tu.	20	6. 26. 49. 26	13. 39. 32, 4	10. 20. 56	21. 30	15. 7, 1	9, 7
W.	21	6. 27. 49. 12	13. 43. 19, 2	10. 42. 26	21. 20	15. 16, 8	9, 0
Th.	22	6. 28. 49. 0	13. 47. 6, 8	11. 3. 46	21. 11	15. 25, 8	8, 3
F.	23	6. 29. 48. 50	13. 50. 55, 0	11. 24. 57	21. 0	15. 34, 1	7, 6
Sa.	24	7. 0. 48. 42	13. 54. 43, 9	11. 45. 57	20. 50	15. 41, 7	6, 9
Sun.	25	7. 1. 48. 36	13. 58. 33, 6	12. 6. 47	20. 38	15. 48, 6	6, 2
M.	26	7. 2. 48. 33	14. 2. 24, 0	12. 27. 25	20. 27	15. 54, 8	5, 4
Tu.	27	7. 3. 48. 31	14. 6. 15, 1	12. 47. 52	20. 15	16. 0, 2	4, 7
W.	28	7. 4. 48. 32	14. 10. 7, 0	13. 8. 7	20. 2	16. 4, 9	3, 9
Th.	29	7. 5. 48. 35	14. 13. 59, 6	13. 28. 9	19. 50	16. 8, 8	3, 1
F.	30	7. 6. 48. 39	14. 17. 53, 0	13. 47. 59	19. 37	16. 11, 9	2, 4
Sa.	31	7. 7. 48. 45	14. 21. 47, 2	14. 7. 36	19. 23	16. 14, 3	1, 6

Days	Time of ⊙'s Semidiam. passing Merid.	The SUN's Semi-diameter.	Hourly Motion.	Logar. Distance.	Place of the ☽'s Node.
	M. S.	M. S.	M. S.		S. D. M.
1	1. 4, 1	16. 1, 1	2. 27, 7	0. 000139	5. 27. 52
7	1. 4, 4	16. 2, 7	2. 28, 2	9. 999368	5. 27. 33
13	1. 4, 8	16. 4, 4	2. 28, 8	9. 998609	5. 27. 14
19	1. 5, 3	16. 6, 0	2. 29, 3	9. 997886	5. 26. 55
25	1. 5, 9	16. 7, 6	2. 29, 8	9. 997184	5. 26. 36

ECLIPSES OF THE SATELLITES OF JUPITER.

MEAN TIME.

I. Satellite.		II. Satellite.		III. Satellite.	
Emersions.		*Emersions.*			
Days.	H. M. S.	Days.	H. M. S.	Days.	H. M. S.
1	20. 34. 14	3	9. 21. 44	4	14. 28. 10 Im.
3	15. 2. 55	6	22. 40. 2	4	17. 9. 43 E.
5	9. 31. 39	10	11. 59. 17	11	18. 27. 26 Im.
7	4. 0. 20	14	1. 17. 38	11	21. 9. 45 E.
8	22. 29. 3	17	14. 36. 56	18	22. 26. 40 Im.
10	16. 57. 44	21	3. 55. 18	19	1. 9. 53 E.
12	11. 26. 26	24	17. 14. 38	26	2. 25. 26 Im.
*14	5. 55. 7	28	6. 32. 56	26	5. 9. 33 E.
16	0. 23. 49	31	19. 52. 19		
17	18. 52. 29				
19	13. 21. 10				
21	7. 49. 49				
23	2. 18. 30				
24	20. 47. 9			IV. Satellite.	
26	15. 15. 49				
28	9. 44. 27				
30	4. 13. 7				
31	22. 41. 44				

Days	THE PLANETS' Heliocentric Long.	Lat.	Geocentric Long.	Lat.	Declin.	Rt. Asc. *in Time.*	Passage Merid.
	S. D. M.	D.M.	S. D. M.	D.M.	D.M.	H. M.	H. M.
	☿ Gr. Elong. 5d.		*MERCURY.*			Inf. ☌ 28d. 13h.	
1	9. 12. 53	5. 51 S	7. 3. 1	2. 29 S	14. 52 S	14. 0	1. 30
4	9. 21. 53	6. 23	7. 6. 15	2. 47	16. 14	14. 12	1. 32
7	10. 1. 20	6. 46	7. 9. 7	3. 2	17. 25	14. 23	1. 31
10	10. 11. 22	6. 58	7. 11. 29	3. 12	18. 20	14. 32	1. 30
13	10. 22. 8	6. 58	7. 13. 13	3. 17	18. 56	14. 39	1. 25
16	11. 3. 48	6. 41	7. 14. 6	3. 13	19. 9	14. 42	1. 18
19	11. 16. 30	6. 3	7. 13. 55	2. 59	18. 52	14. 42	1. 6
22	0. 0. 25	5. 2	7. 12. 28	2. 30	17. 58	14. 37	0. 49
25	0. 15. 40	3. 35	7. 9. 42	1. 46	16. 25	14. 27	0. 28
28	1. 2. 15	1. 42 S	7. 6. 2	0. 49 S	14. 19	14. 14	0. 4
31	1. 20. 4	0. 28 N	7. 2. 18	0. 13 N	12. 5	14. 1	23. 31
	♀		*VENUS.*				
1	9. 4. 44	1. 8 S	7. 12. 53	0. 39 S	16. 20 S	14. 41	2. 12
7	9. 14. 13	1. 39	7. 20. 6	0. 58	18. 43	15. 10	2. 18
13	9. 23. 42	2. 7	7. 27. 19	1. 17	20. 50	15. 39	2. 26
19	10. 3. 11	2. 31	8. 4. 29	1. 35	22. 37	16. 9	2. 33
25	10. 12. 40	2. 52	8. 11. 38	1. 52	24. 3	16. 39	2. 41
	♂		*MARS.*				
1	5. 14. 47	1. 39 N	5. 23. 28	1. 3 N	3. 34 N	11. 38	23. 7
7	5. 17. 25	1. 37	5. 27. 19	1. 2	2. 1	11. 52	22. 59
13	5. 20. 3	1. 34	6. 1. 10	1. 1	0. 28 N	12. 6	22. 51
19	5. 22. 42	1. 32	6. 5. 1	1. 0	1. 5 S	12. 20	22. 43
25	5. 25. 21	1. 29	6. 8. 53	0. 58	2. 38	12. 34	22. 34
	♃		*JUPITER.*				
1	8. 20. 9	0. 25 N	8. 10. 29	0. 23 N	21. 39 S	16. 36	4. 6
7	8. 20. 38	0. 24	8. 11. 27	0. 22	21. 48	16. 40	3. 48
13	8. 21. 7	0. 24	8. 12. 29	0. 22	21. 57	16. 44	3. 30
19	8. 21. 36	0. 23	8. 13. 35	0. 21	22. 6	16. 49	3. 13
25	8. 22. 5	0. 23	8. 14. 43	0. 20	22. 15	16. 54	2. 55
	♄		*SATURN.*				
1	4. 10. 12	0. 46 N	4. 15. 13	0. 44 N	16. 59 N	9. 12	20. 39
7	4. 10. 25	0. 47	4. 15. 45	0. 44	16. 50	9. 14	20. 20
13	4. 10. 38	0. 47	4. 16. 15	0. 45	16. 42	9. 16	20. 0
19	4. 10. 51	0. 48	4. 16. 42	0. 46	16. 35	9. 18	19. 39
25	4. 11. 4	0. 48	4. 17. 6	0. 47	16. 28	9. 19	19. 18
	♅		*GEORGIAN.*			□ 25d. 17½h.	
1	10. 5. 8	0. 37 S	10. 2. 30	0. 37 S	20. 14 S	20. 20	7. 49
11	10. 5. 14	0. 37	10. 2. 27	0. 37	20. 14	20. 20	7. 12
21	10. 5. 21	0. 37	10. 2. 29	0. 37	20. 13	20. 20	6. 35

Days of the Week.	Days of the Month.	The MOON's Longitude. Noon.	Longitude. Midnight.	Latitude. Noon.	Latitude. Midnight.
		S. D. M. S.	S. D. M. S.	D. M. S.	D. M. S.
Th.	1	7. 15. 26. 3	7. 21. 32. 1	3. 51. 56 N	4. 13. 37 N
F.	2	7. 27. 40. 52	8. 3. 52. 57	4. 32. 32	4. 48. 25
Sa.	3	8. 10. 8. 35	8. 16. 28. 9	5. 1. 2	5. 10. 9
Sun.	4	8. 22. 52. 3	8. 29. 20. 36	5. 15. 32	5. 17. 0
M.	5	9. 5. 54. 10	9. 12. 33. 3	5. 14. 23	5. 7. 33
Tu.	6	9. 19. 17. 32	9. 26. 7. 47	4. 56. 24	4. 40. 56
W.	7	10. 3. 3. 58	10. 10. 6. 5	4. 21. 10	3. 57. 12
Th.	8	10. 17. 14. 3	10. 24. 27. 39	3. 29. 16	2. 57. 38
F.	9	11. 1. 46. 30	11. 9. 10. 4	2. 22. 44	1. 45. 5
Sa.	10	11. 16. 37. 40	11. 24. 8. 27	1. 5. 19 N	0. 24. 9 N
Sun.	11	0. 1. 41. 26	0. 9. 15. 34	0. 17. 38 S	0. 59. 10 S
M.	12	0. 16. 49. 40	0. 24. 22. 34	1. 39. 38	2. 18. 12
Tu.	13	1. 1. 53. 6	1. 9. 20. 8	2. 54. 9	3. 26. 49
W.	14	1. 16. 42. 42	1. 23. 59. 55	3. 55. 39	4. 20. 17
Th.	15	2. 1. 11. 6	2. 8. 15. 44	4. 40. 26	4. 55. 57
F.	16	2. 15. 13. 29	2. 22. 4. 13	5. 6. 49	5. 13. 5
Sa.	17	2. 28. 47. 56	3. 5. 24. 46	5. 14. 54	5. 12. 28
Sun.	18	3. 11. 55. 2	3. 18. 19. 9	5. 6. 2	4. 55. 51
M.	19	3. 24. 37. 33	4. 0. 50. 46	4. 42. 14	4. 25. 27
Tu.	20	4. 6. 59. 22	4. 13. 3. 59	4. 5. 47	3. 43. 36
W.	21	4. 19. 5. 13	4. 25. 3. 39	3. 19. 7	2. 52. 38
Th.	22	5. 0. 59. 55	5. 6. 54. 35	2. 24. 28	1. 54. 53
F.	23	5. 12. 48. 13	5. 18. 41. 20	1. 24. 10	0. 52. 38 S
Sa.	24	5. 24. 34. 25	6. 0. 27. 54	0. 20. 33 S	0. 11. 44 N
Sun.	25	6. 6. 22. 13	6. 12. 17. 43	0. 43. 57 N	1. 15. 45
M.	26	6. 18. 14. 43	6. 24. 13. 30	1. 46. 50	2. 16. 51
Tu.	27	7. 0. 14. 18	7. 6. 17. 20	2. 45. 28	3. 12. 22
W.	28	7. 12. 22. 46	7. 18. 30. 45	3. 37. 13	3. 59. 43
Th.	29	7. 24. 41. 23	8. 0. 54. 48	4. 19. 33	4. 36. 26
F.	30	8. 7. 11. 5	8. 13. 30. 20	4. 50. 8	5. 0. 24
Sa.	31	8. 19. 52. 40	8. 26. 18. 13	5. 7. 1	5. 9. 50

Days of the Month.	Age.	Pass. Merid.	THE MOON's Right Ascension.		Declination.	
			Noon.	*Midnight.*	*Noon.*	*Midnight.*
	D.	H. M.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
1	5	2. 32	224. 7. 6	230. 14. 25	12. 46. 32 S	14. 4. 39 S
2	6	3. 19	236. 28. 17	242. 48. 58	15. 13. 54	16. 13. 10
3	7	4. 9	249. 16. 31	255. 50. 52	17. 1. 25	17. 37. 38
4	8	5. 0	262. 31. 46	269. 18. 43	18. 0. 55	18. 10. 28
5	9	5. 54	276. 11. 6	283. 8. 11	18. 5. 34	17. 45. 45
6	10	6. 48	290. 9. 10	297. 13. 12	17. 10. 42	16. 20. 23
7	11	7. 43	304. 19. 30	311. 27. 22	15. 15. 1	13. 55. 6
8	12	8. 39	318. 36. 11	325. 45. 41	12. 21. 25	10. 35. 9
9	13	9. 34	332. 55. 32	340. 5. 44	8. 37. 44	6. 30. 56
10	14	10. 30	347. 16. 24	354. 27. 45	4. 16. 47 S	1. 57. 34 S
11	15	11. 26	1. 40. 4	8. 53. 40	0. 24. 13 N	2. 45. 58 N
12	16	12. 23	16. 8. 46	23. 25. 28	5. 5. 2	7. 18. 50
13	17	13. 20	30. 43. 43	38. 3. 13	9. 24. 50	11. 20. 45
14	18	14. 17	45. 23. 25	52. 43. 34	13. 4. 38	14. 34. 51
15	19	15. 14	60. 2. 39	67. 19. 31	15. 50. 12	16. 49. 50
16	20	16. 9	74. 32. 55	81. 41. 37	17. 33. 22	18. 0. 46
17	21	17. 3	88. 44. 27	95. 40. 24	18. 12. 20	18. 8. 41
18	22	17. 54	102. 28. 43	109. 8. 54	17. 50. 37	17. 19. 4
19	23	18. 43	115. 40. 41	122. 4. 5	16. 35. 7	15. 39. 52
20	24	19. 30	128. 19. 20	134. 26. 56	14. 34. 27	13. 19. 56
21	25	20. 15	140. 27. 32	146. 21. 53	11. 57. 26	10. 27. 59
22	26	20. 58	152. 10. 52	157. 55. 28	8. 52. 34	7. 12. 11
23	27	21. 41	163. 36. 40	169. 15. 30	5. 27. 47	3. 40. 16 N
24	28	22. 23	174. 53. 1	180. 30. 16	1. 50. 35 N	0. 0. 20 S
25	29	23. 6	186. 8. 16	191. 48. 1	1. 51. 32 S	3. 42. 2
26	30	23. 50	197. 30. 27	203. 16. 28	5. 30. 48	7. 16. 46
27	1	♂	209. 6. 52	215. 2. 24	8. 58. 52	10. 35. 58
28	2	0. 35	221. 3. 38	227. 11. 2	12. 6. 53	13. 30. 27
29	3	1. 22	233. 24. 52	239. 45. 16	14. 45. 30	15. 50. 51
30	4	2. 11	246. 12. 7	252. 45. 6	16. 45. 25	17. 28. 11
31	5	3. 2	259. 23. 44	266. 7. 24	17. 58. 12	18. 14. 43

Days of the Week.	Days of the Month.	The MOON's Semidiameter.		Hor. Parallax.		Proportional Logarithm.	
		Noon.	*Midnight.*	*Noon.*	*Midnight.*		
		M. S.	M. S.	M. S.	M. S.	*Noon.*	*Midn.*
Th.	1	14. 55	14. 58	54. 45	54. 57	5169	5153
F.	2	15. 2	15. 6	55. 11	55. 26	5135	5115
Sa.	3	15. 11	15. 16	55. 43	56. 1	5093	5070
Sun.	4	15. 22	15. 27	56. 22	56. 43	5043	5016
M.	5	15. 34	15. 40	57. 6	57. 30	4986	4956
Tu.	6	15. 47	15. 54	57. 55	58. 21	4925	4892
W.	7	16. 1	16. 8	58. 47	59. 13	4860	4828
Th.	8	16. 15	16. 21	59. 37	60. 0	4799	4771
F.	9	16. 27	16. 32	60. 21	60. 39	4746	4724
Sa.	10	16. 36	16. 38	60. 54	61. 4	4707	4695
Sun.	11	16. 40	16. 41	61. 10	61. 12	4688	4685
M.	12	16. 40	16. 38	61. 9	61. 1	4689	4698
Tu.	13	16. 34	16. 30	60. 49	60. 32	4712	4733
W.	14	16. 24	16. 18	60. 12	59. 48	4757	4786
Th.	15	16. 11	16. 3	59. 22	58. 54	4817	4852
F.	16	15. 55	15. 47	58. 26	57. 57	4886	4922
Sa.	17	15. 40	15. 32	57. 28	57. 0	4959	4994
Sun.	18	15. 25	15. 18	56. 33	56. 8	5028	5061
M.	19	15. 11	15. 6	55. 44	55. 23	5092	5119
Tu.	20	15. 0	14. 56	55. 4	54. 48	5144	5165
W.	21	14. 52	14. 49	54. 34	54. 22	5183	5199
Th.	22	14. 46	14. 45	54. 13	54. 6	5211	5221
F.	23	14. 43	14. 43	54. 2	53. 59	5226	5230
Sa.	24	14. 43	14. 43	53. 59	54. 0	5230	5229
Sun.	25	14. 44	14. 45	54. 3	54. 7	5225	5219
M.	26	14. 46	14. 48	54. 13	54. 20	5211	5202
Tu.	27	14. 51	14. 53	54. 28	54. 38	5191	5178
W.	28	14. 56	14. 59	54. 48	54. 59	5165	5150
Th.	29	15. 2	15. 6	55. 11	55. 23	5135	5119
F.	30	15. 9	15. 13	55. 37	55. 51	5101	5082
Sa.	31	15. 17	15. 22	56. 6	56. 22	5063	5043

DISTANCES of the Moon's *Centre* from the Sun, and from Stars *EAST* of her.

Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
	1	74. 7. 4	72. 45. 0	71. 22. 59	70. 0. 58	68. 38. 59	67. 17. 3	65. 55. 12	64. 33. 26
α Aquilæ.	2	63. 11. 46	61. 50. 10	60. 28. 45	59. 7. 30	57. 46. 24	56. 25. 31	55. 4. 55	53. 44. 34
	3	52. 24. 30	- - -	- - -	- - -	- - -	- - -	- - -	- - -
	3	83. 45. 36	82. 19. 19	80. 52. 53	79. 26. 16	77. 59. 30	76. 32. 35	75. 5. 32	73. 38. 22
Fomalhaut.	4	72. 11. 4	70. 43. 39	69. 16. 9	67. 48. 34	66. 20. 55	64. 53. 11	63. 25. 27	61. 57. 43
	5	60. 29. 58	59. 2. 15	57. 34. 38	56. 7. 4	54. 39. 37	- - -	- - -	- - -
	5	- - -	- - -	- - -	- - -	68. 6. 12	66. 32. 13	64. 58. 3	63. 23. 41
α Pegasi.	6	61. 49. 8	60. 14. 27	58. 39. 40	57. 4. 49	55. 29. 52	53. 54. 51	52. 19. 51	50. 44. 54
	7	49. 10. 3	47. 35. 15	46. 0. 40	44. 26. 24	42. 52. 30	41. 19. 3	39. 46. 8	38. 13. 49
	8	36. 42. 12	- - -	- - -	- - -	- - -	- - -	- - -	- - -
	8	77. 38. 28	75. 53. 29	74. 8. 11	72. 22. 34	70. 36. 38	68. 50. 26	67. 3. 59	65. 17. 19
α Arietis.	9	63. 30. 25	61. 43. 19	59. 56. 2	58. 8. 37	56. 21. 6	54. 33. 28	52. 45. 47	50. 58. 7
	10	49. 10. 30	47. 22. 58	45. 35. 34	43. 48. 21	42. 1. 21	- - -	- - -	- - -
	10	- - -	- - -	- - -	- - -	73. 23. 28	71. 29. 54	69. 36. 14	67. 42. 28
Aldebaran.	11	65. 48. 35	63. 54. 38	62. 0. 39	60. 6. 39	58. 12. 37	56. 18. 36	54. 24. 38	52. 30. 44
	12	50. 36. 53	48. 43. 8	46. 49. 29	44. 55. 58	43. 2. 39	41. 9. 28	39. 16. 31	37. 23. 45
	13	35. 31. 13	33. 38. 55	31. 46. 55	29. 55. 11	28. 3. 45	- - -	- - -	- - -
	13	- - -	- - -	- - -	- - -	72. 6. 55	70. 18. 17	68. 30. 0	66. 42. 7
Pollux.	14	64. 54. 40	63. 7. 38	61. 21. 4	59. 35. 0	57. 49. 23	56. 4. 19	54. 19. 45	52. 35. 44
	15	50. 52. 18	49. 9. 27	47. 27. 14	45. 45. 40	44. 4. 47	42. 24. 34	40. 45. 6	39. 6. 24
	16	37. 28. 33	35. 51. 33	34. 15. 29	32. 40. 21	31. 6. 13	- - -	- - -	- - -

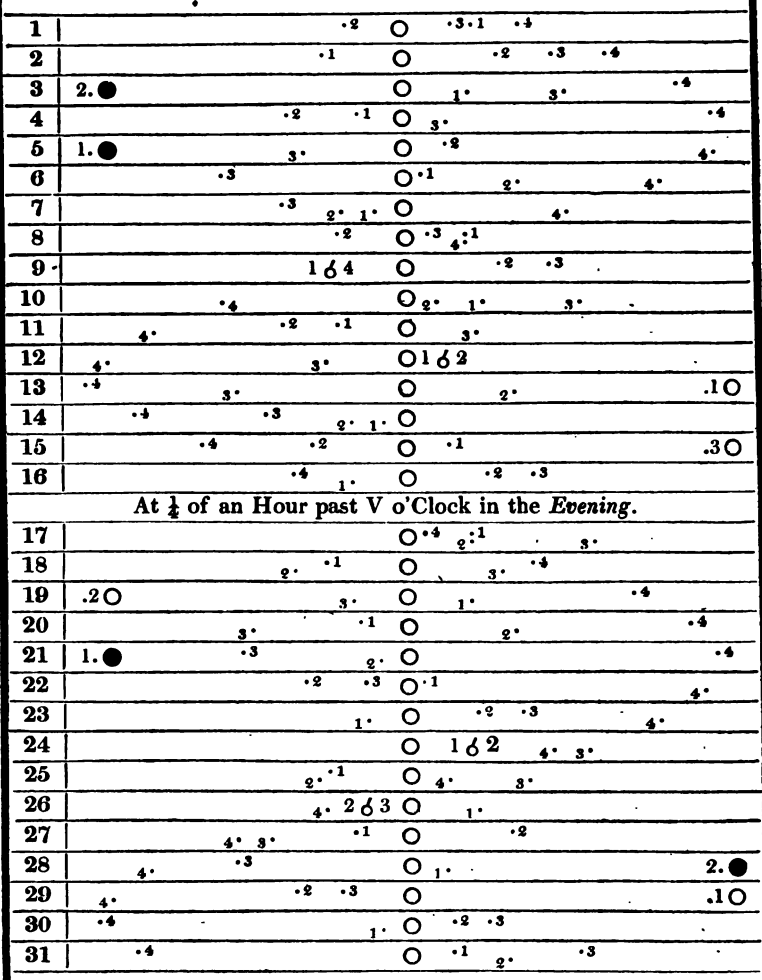
Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
Regulus.	16	- - -	- - -	- - -	- - -	65. 32. 41	63. 51. 42	62. 11. 9	60. 31. 4
	17	58. 51. 25	57. 12. 12	55. 33. 25	53. 55. 4	52. 17. 7	50. 39. 35	49. 2. 27	47. 25. 44
	18	45. 49. 24	44. 13. 27	42. 37. 53	41. 2. 42	39. 27. 53	37. 53. 26	36. 19. 20	34. 45. 35
	19	33. 12. 12	31. 39. 9	30. 6. 27	28. 34. 4	27. 2. 2	- - -	- - -	- - -
The Sun.	16	- - -	- - -	- - -	- - -	121. 7. 44	119. 34. 4	118. 0. 51	116. 28. 4
	17	114. 55. 44	113. 23. 49	111. 52. 19	110. 21. 15	108. 50. 35	107. 20. 20	105. 50. 28	104. 21. 0
	18	102. 51. 54	101. 23. 11	99. 54. 49	98. 26. 49	96. 59. 10	95. 31. 52	94. 4. 53	92. 38. 14
	19	91. 11. 55	89. 45. 54	88. 20. 11	86. 54. 46	85. 29. 37	84. 4. 44	82. 40. 7	81. 15. 45
	20	79. 51. 38	78. 27. 45	77. 4. 5	75. 40. 38	74. 17. 23	72. 54. 20	71. 31. 27	70. 8. 45
	21	68. 46. 14	67. 23. 52	66. 1. 39	64. 39. 34	63. 17. 38	61. 55. 49	60. 34. 6	59. 12. 30
	22	57. 51. 0	56. 29. 35	55. 8. 15	53. 47. 0	52. 25. 49	51. 4. 41	49. 43. 36	48. 22. 34
	23	47. 1. 35	45. 40. 37	44. 19. 41	42. 58. 48	41. 37. 53	40. 17. 0	38. 56. 7	- - -
Fomalhaut.	30	- - -	- - -	- - -	- - -	80. 39. 8	79. 12. 13	77. 45. 12	76. 18. 7
	31	74. 50. 57	73. 23. 43	71. 56. 28	70. 29. 11	69. 1. 53	67. 34. 34	66. 7. 18	64. 40. 2
	N.1	63. 12. 49	- - -	- - -	- - -	- - -	- - -	- - -	- - -

DISTANCES of the Moon's *Centre* from the Sun, and from Stars *WEST* of her.

Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
The Sun.	1	- - -	38. 59. 14	40. 23. 13	41. 47. 20	43. 11. 37	44. 36. 3	46. 0. 40	47. 25. 26
	2	48. 50. 23	50. 15. 31	51. 40. 50	53. 6. 21	54. 32. 4	55. 57. 59	57. 24. 6	58. 50. 27
	3	60. 17. 1	61. 43. 48	63. 10. 51	64. 38. 8	66. 5. 40	67. 33. 28	69. 1. 32	70. 29. 52
	4	71. 58. 29	73. 27. 22	74. 56. 34	76. 26. 3	77. 55. 50	79. 25. 56	80. 56. 21	82. 27. 6
	5	83. 58. 11	85. 29. 36	87. 1. 21	88. 33. 28	90. 5. 55	91. 38. 44	93. 11. 55	94. 45. 28
	6	96. 19. 23	97. 53. 40	99. 28. 20	101. 3. 24	102. 38. 50	104. 14. 40	105. 50. 54	107. 27. 31
	7	109. 4. 32	110. 41. 56	112. 19. 44	113. 57. 55	115. 36. 30	117. 15. 28	118. 54. 50	120. 34. 35
Antares.	5	- - -	- - -	- - -	- - -	36. 26. 5	38. 2. 33	39. 39. 36	41. 17. 14
	6	42. 55. 27	44. 34. 13	46. 13. 31	47. 53. 22	49. 33. 44	51. 14. 36	52. 55. 57	54. 37. 48
	7	56. 20. 8	58. 2. 56	59. 46. 11	61. 29. 54	63. 14. 5	64. 58. 42	66. 43. 45	68. 29. 13
	8	70. 15. 7	72. 1. 26	73. 48. 9	75. 35. 15	77. 22. 45	79. 10. 38	80. 58. 51	82. 47. 26
	9	84. 36. 22	86. 25. 37	88. 15. 11	90. 5. 1	91. 55. 10	93. 45. 35	95. 36. 13	97. 27. 6
	10	99. 18. 12	101. 9. 30	103. 0. 57	104. 52. 33	106. 44. 19	- - -	- - -	- - -
α Aquilæ.	10	- - -	- - -	- - -	- - -	59. 34. 12	61. 13. 44	62. 53. 50	64. 34. 27
	11	66. 15. 32	67. 57. 2	69. 38. 52	71. 21. 1	73. 3. 27	74. 46. 4	76. 28. 50	78. 11. 44
	12	79. 54. 43	81. 37. 44	83. 20. 44	85. 3. 41	86. 46. 33	- - -	- - -	- - -
Fomalhaut.	12	- - -	- - -	- - -	- - -	54. 47. 18	56. 26. 32	58. 6. 5	59. 45. 57
	13	61. 26. 5	63. 6. 24	64. 46. 52	66. 27. 24	68. 8. 1	69. 48. 35	71. 29. 4	73. 9. 29
	14	74. 49. 47	76. 29. 54	78. 9. 49	79. 49. 29	81. 28. 53	- - -	- - -	- - -

Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
	14	- - -	- - -	- - -	- - -	66. 11. 51	67. 53. 20	69. 34. 34	71. 15. 32
α Pegasi.	15	72. 56. 15	74. 36. 40	76. 16. 46	77. 56. 33	79. 36. 0	81. 15. 5	82. 53. 47	84. 32. 5
	16	86. 10. 0	- - -	- - -	- - -	- - -	- - -	- - -	- - -
	16	42. 32. 35	44. 9. 49	45. 46. 54	47. 23. 50	49. 0. 38	50. 37. 15	52. 13. 38	53. 49. 49
α Arietis.	17	55. 25. 46	57. 1. 25	58. 36. 48	60. 11. 55	61. 46. 45	63. 21. 17	64. 55. 31	66. 29. 28
	18	68. 3. 7	69. 36. 28	71. 9. 32	72. 42. 17	74. 14. 45	- - -	- - -	- - -
	18	- - -	- - -	- - -	- - -	40. 43. 59	42. 18. 47	43. 53. 16	45. 27. 25
Aldebaran.	19	47. 1. 15	48. 34. 46	50. 8. 0	51. 40. 57	53. 13. 37	54. 46. 0	56. 18. 9	57. 50. 3
	20	59. 21. 42	60. 53. 7	62. 24. 20	63. 55. 20	65. 26. 7	66. 56. 43	68. 27. 9	69. 57. 24
	21	71. 27. 29	72. 57. 24	74. 27. 12	75. 56. 50	77. 26. 21	- - -	- - -	- - -
	21	- - -	- - -	- - -	- - -	35. 26. 44	36. 50. 54	38. 15. 17	39. 39. 51
Pollux.	22	41. 4. 36	42. 29. 31	43. 54. 36	45. 19. 48	46. 45. 9	48. 10. 35	49. 36. 9	51. 1. 48
	23	52. 27. 33	53. 53. 24	55. 19. 19	56. 45. 20	58. 11. 25	- - -	- - -	- - -
	30	- - -	- - -	- - -	- - -	- - -	- - -	39. 23. 52	40. 51. 22
The Sun.	31	42. 19. 4	43. 46. 58	45. 15. 5	46. 43. 25	48. 11. 57	49. 40. 42	51. 9. 40	52. 38. 51
	N.1	54. 8. 16	- - -	- - -	- - -	- - -	- - -	- - -	- - -

CONFIGURATIONS of the SATELLITES of JUPITER, at ¼ of an Hour past VI o'Clock in the *Evening*.



Days of the Week.	Days of the Month.	*Sundays, and other remarkable Days.*
Sun.	1	*20th S. aft. Tr. All Saints.*
M.	2	All Souls.
Tu.	3	On M. of All Souls, 1 ret.
W.	4	[*Prs. Sophia b.*
Th.	5	*Powder Plot*, 1605.
F.	6	Mich. T. beg. Leonard.
Sa.	7	
Sun.	8	*21st Sun. aft. Trin. Prs.*
M.	9	[*Augusta Sophia b.*
Tu.	10	
W.	11	St. Martin.
Th.	12	On Mor. of St. Mart. 2 ret.
F.	13	Britius. [Camb. T. div. m.
Sa.	14	
Sun.	15	*22d Sun. after Trinity.*
M.	16	[Machutus.
Tu.	17	Hugh, Bp. of Lincoln.
W.	18	In 8 days of St. Mart. 3 ret.
Th.	19	
F.	20	Edm. K. and Martyr.
Sa.	21	
Sun.	22	*23d Sunday aft. Trinity.*
M.	23	St. Clement. [Cecilia.
Tu.	24	
W.	25	Cath. In 15d. of St. Mar-
Th.	26	[tin, 4 ret.
F.	27	
Sa.	28	Mich. Term ends.
Sun.	29	*Advent Sunday.*
M.	30	*St. Andrew.*

Phases of the MOON.

	D.	H.	M.
☽ *First Quarter*	3.	21.	51
○ Full Moon	10.	13.	46
☾ *Last Quarter*	17.	20.	51
● New Moon	26.	0.	32

Other *Phenomena.*

D.	H.	M.	
1.	4.	-	♀ *B* Oph.
3.	4.	-	☽ ☌ ♑.
5.	7.	-	☽ ☍ ♒.
5.	8.	-	♂ ☊ ♏.
6.	-.	-	☿ Stationary.
9.	0.	-	☽ ☌ ♓.
11.	15.	-	☽ ☌ ☉.
11.	16.	-	☽ 1 ☌ ☉.
11.	17.	-	☽ 2 ☌ ☉.
11.	21.	-	☽ ☌ ☉.
12.	22.	-	♀ ☌ ♐.
13.	17.	-	☿ ☌ ♏.
17.	8.	-	☽ ☍ ♌.
17.	13.	-	☽ ☌ ♌.
18.	4.	-	♀ ☍ ♐.
18.	23.	-	♃ *B* Oph.
19.	20.	-	☽ ☐ ♌.
20.	8.	-	☽ ☌ ♏.
21.	0.	-	☽ ☌ ♏.
22.	0.	53	☉ enters ♐.
22.	2.	-	☽ ☊ ♏.
22.	5.	-	♀ ☿ ♐.
23.	11.	-	☽ ☌ ♏.
25.	3.	-	☽ ☌ ♎.
28.	21.	-	☿ 4 ☍ ♎.
29.	-.	-	♄ Stationary.
30.	7.	-	☿ ☌ ♎.
30.	9.	-	☽ ☌ ♑.

Days of the Week.	Days of the Month.	THE SUN's Longitude.	Rt. Ascen. *in Time.*	Declin. *South.*	Diff.	Equation of Time. *Sub. from app. Time.*	Diff.
		S. D. M. S.	H. M. S.	D. M. S.	M. S.	M. S.	S.
Sun.	1	7. 8. 48. 53	14. 25. 42, 1	14. 26. 59	19. 8	16. 15, 9	0, 8
M.	2	7. 9. 49. 2	14. 29. 37, 8	14. 46. 7	18. 54	16. 16, 7	0, 1
Tu.	3	7. 10. 49. 13	14. 33. 34, 3	15. 5. 1	18. 40	16. 16, 8	0, 8
W.	4	7. 11. 49. 25	14. 37. 31, 7	15. 23. 41	18. 24	16. 16, 0	1, 6
Th.	5	7. 12. 49. 39	14. 41. 29, 8	15. 42. 5	18. 8	16. 14, 4	2, 3
F.	6	7. 13. 49. 54	14. 45. 28, 7	16. 0. 13	17. 52	16. 12, 1	3, 2
Sa.	7	7. 14. 50. 11	14. 49. 28, 5	16. 18. 5	17. 36	16. 8, 9	4, 0
Sun.	8	7. 15. 50. 29	14. 53. 29, 0	16. 35. 41	17. 19	16. 4, 9	4, 8
M.	9	7. 16. 50. 49	14. 57. 30, 4	16. 53. 0	17. 1	16. 0, 1	5, 7
Tu.	10	7. 17. 51. 10	15. 1. 32, 7	17. 10. 1	16. 44	15. 54, 4	6, 5
W.	11	7. 18. 51. 33	15. 5. 35, 7	17. 26. 45	16. 26	15. 47, 9	7, 4
Th.	12	7. 19. 51. 58	15. 9. 39, 7	17. 43. 11	16. 7	15. 40, 5	8, 2
F.	13	7. 20. 52. 25	15. 13. 44, 5	17. 59. 18	15. 49	15. 32, 3	9, 1
Sa.	14	7. 21. 52. 53	15. 17. 50, 1	18. 15. 7	15. 29	15. 23, 2	9, 9
Sun.	15	7. 22. 53. 23	15. 21. 56, 7	18. 30. 36	15. 10	15. 13, 3	10, 8
M.	16	7. 23. 53. 55	15. 26. 4, 1	18. 45. 46	14. 50	15. 2, 5	11, 7
Tu.	17	7. 24. 54. 29	15. 30. 12, 3	19. 0. 36	14. 30	14. 50, 8	12, 5
W.	18	7. 25. 55. 5	15. 34. 21, 4	19. 15. 6	14. 9	14. 38, 3	13, 4
Th.	19	7. 26. 55. 43	15. 38. 31, 4	19. 29. 15	13. 48	14. 24, 9	14, 2
F.	20	7. 27. 56. 22	15. 42. 42, 2	19. 43. 3	13. 26	14. 10, 7	15, 1
Sa.	21	7. 28. 57. 4	15. 46. 53, 8	19. 56. 29	13. 4	13. 55, 6	15, 8
Sun.	22	7. 29. 57. 46	15. 51. 6, 3	20. 9. 33	12. 43	13. 39, 8	16, 7
M.	23	8. 0. 58. 31	15. 55. 19, 6	20. 22. 16	12. 19	13. 23, 1	17, 4
Tu.	24	8. 1. 59. 17	15. 59. 33, 6	20. 34. 35	11. 57	13. 5, 7	18, 3
W.	25	8. 3. 0. 4	16. 3. 48, 5	20. 46. 32	11. 34	12. 47, 4	19, 0
Th.	26	8. 4. 0. 54	16. 8. 4, 1	20. 58. 6	11. 10	12. 28, 4	19, 7
F.	27	8. 5. 1. 44	16. 12. 20, 4	21. 9. 16	10. 45	12. 8, 7	20, 5
Sa.	28	8. 6. 2. 35	16. 16. 37, 5	21. 20. 1	10. 22	11. 48, 2	21, 1
Sun.	29	8. 7. 3. 28	16. 20. 55, 2	21. 30. 23	9. 57	11. 27, 1	21, 8
M.	30	8. 8. 4. 21	16. 25. 13, 7	21. 40. 20	9. 32	11. 5, 3	22, 5

Days	Time of ⊙'s Semidiam. passing Merid.	The SUN's Semi-diameter.	Hourly Motion.	Logar. Distance.	Place of the ☽'s Node.
	M. S.	M. S.	M. S.		S. D. M.
1	1. 6, 8	16. 9, 4	2. 30, 3	9. 996378	5. 26. 14
7	1. 7, 5	16. 10, 9	2. 30, 8	9. 995714	5. 25. 55
13	1. 8, 2	16. 12, 2	2. 31, 2	9. 995110	5. 25. 36
19	1. 8, 8	16. 13, 4	2. 31, 6	9. 994578	5. 25. 16
25	1. 9, 5	16. 14, 5	2. 31, 9	9. 994100	5. 24. 57

ECLIPSES OF THE SATELLITES OF JUPITER.

MEAN TIME.

I. Satellite.		II. Satellite.		III. Satellite.	
Emersions.		*Emersions.*			
Days.	H. M. S.	Days.	H. M. S.	Days.	H. M. S.
2	17. 10. 24	4	9. 10. 38	2	6. 24. 5 Im.
4	11. 39. 0	7	22. 30. 0	2	9. 9. 7 E.
6	6. 7. 38	11	11. 48. 17	● 9	10. 23. 6 Im.
8	0. 36. 15	15	1. 7. 39	9	13. 8. 57 E.
9	19. 4. 52	18	14. 25. 53	●16	14. 21. 58 Im.
11	13. 33. 28			16	17. 8. 43 E.
13	8. 2. 5				
15	2. 30. 40				
16	20. 59. 17				
18	15. 27. 52				
20	9. 56. 27				

IV. Satellite.	

Days	THE PLANETS' Heliocentric Long.	Lat.	Geocentric Long.	Lat.	Declin.	Rt. Asc. *in Time.*	Passage Merid.
	S. D. M.	D. M.	S. D. M.	D. M.	D. M.	H. M.	H. M.
	☿		*MERCURY.*			Gr. Elong. 14^d.	
1	1. 26. 13	1. 13 N	7. 1. 13	0. 32 N	11. 24 S	13. 57	23. 25
4	2. 15. 2	3. 23	6. 28. 55	1. 23	9. 49	13. 50	23. 8
7	3. 3. 54	5. 11	6. 28. 19	1. 57	9. 3	13. 48	22. 56
10	3. 22. 12	6. 24	6. 29. 20	2. 16	9. 8	13. 52	22. 50
13	4. 9. 23	6. 57	7. 1. 38	2. 21	9. 51	14. 1	22. 47
16	4. 25. 11	6. 55	7. 4. 50	2. 16	11. 0	14. 13	22. 48
19	5. 9. 34	6. 26	7. 8. 38	2. 5	12. 25	14. 28	22. 50
22	5. 22. 36	5. 39	7. 12. 48	1. 49	13. 58	14. 44	22. 54
25	6. 4. 29	4. 41	7. 17. 11	1. 30	15. 32	15. 1	22. 58
28	6. 15. 23	3. 37	7. 21. 41	1. 10	17. 5	15. 18	23. 3
30	6. 22. 12	2. 52	7. 24. 44	0. 55	18. 4	15. 30	23. 7
	♀		*VENUS.*				
1	10. 23. 44	3. 10 S	8. 19. 56	2. 9 S	25. 13 S	17. 15	2. 50
7	11. 3. 15	3. 19	8. 27. 2	2. 21	25. 47	17. 47	2. 58
13	11. 12. 46	3. 23	9. 4. 3	2. 30	25. 54	18. 18	3. 4
19	11. 22. 17	3. 22	9. 11. 2	2. 36	25. 35	18. 49	3. 11
25	0. 1. 50	3. 15	9. 17. 56	2. 37	24. 51	19. 19	3. 16
	♂		*MARS.*				
1	5. 28. 28	1. 25 N	6. 13. 25	0. 56 N	4. 26 S	12. 51	22. 24
7	6. 1. 8	1. 21	6. 17. 18	0. 54	5. 57	13. 5	22. 14
13	6. 3. 50	1. 18	6. 21. 11	0. 53	7. 28	13. 20	22. 4
19	6. 6. 32	1. 14	6. 25. 5	0. 51	8. 56	13. 34	21. 54
25	6. 9. 15	1. 10	6. 29. 0	0. 48	10. 22	13. 49	21. 44
	♃		*JUPITER.*				
1	8. 22. 39	0. 22 N	8. 16. 6	0. 19 N	22. 25 S	17. 0	2. 34
7	8. 23. 8	0. 21	8. 17. 21	0. 18	22. 33	17. 5	2. 15
13	8. 23. 38	0. 21	8. 18. 37	0. 18	22. 41	17. 11	1. 57
19	8. 24. 7	0. 20	8. 19. 55	0. 17	22. 48	17. 16	1. 37
25	8. 24. 36	0. 19	8. 21. 14	0. 16	22. 54	17. 22	1. 18
	♄		*SATURN.*			□ 10^d. 0$\frac{1}{2}^h$.	
1	4. 11. 20	0. 49 N	4. 17. 30	0. 49 N	16. 22 N	9. 21	18. 52
7	4. 11. 33	0. 50	4. 17. 46	0. 50	16. 19	9. 22	18. 29
13	4. 11. 46	0. 50	4. 17. 59	0. 51	16. 16	9. 23	18. 6
19	4. 11. 59	0. 51	4. 18. 7	0. 52	16. 14	9. 23	17. 42
25	4. 12. 12	0. 51	4. 18. 12	0. 53	16. 14	9. 24	17. 17
	♅		*GEORGIAN.*				
1	10. 5. 28	0. 37 S	10. 2. 37	0. 37 S	20. 11 S	20. 20	5. 54
11	10. 5. 35	0. 37	10. 2. 50	0. 36	20. 8	20. 21	5. 15
21	10. 5. 41	0. 37	10. 3. 7	0. 36	20. 4	20. 22	4. 35

Days of the Week.	Days of the Month.	The MOON's Longitude. Noon.	Longitude. Midnight.	Latitude. Noon.	Latitude. Midnight.
		S. D. M. S.	S. D. M. S.	D. M. S.	D. M. S.
Sun.	1	9. 2. 47. 5	9. 9. 19. 25	5. 8. 44 N	5. 3. 37 N
M.	2	9. 15. 55. 20	9. 22. 35. 3	4. 54. 27	4. 41. 13
Tu.	3	9. 29. 18. 40	10. 6. 6. 20	4. 24. 0	4. 2. 54
W.	4	10. 12. 58. 12	10. 19. 54. 20	3. 38. 6	3. 9. 52
Th.	5	10. 26. 54. 47	11. 3. 59. 31	2. 38. 30	2. 4. 23
F.	6	11. 11. 8. 25	11. 18. 21. 17	1. 28. 0	0. 49. 55 N
Sa.	7	11. 25. 37. 48	0. 2. 57. 29	0. 10. 44 N	0. 28. 54 S
Sun.	8	0. 10. 19. 45	0. 17. 43. 53	1. 8. 14 S	1. 46. 32
M.	9	0. 25. 9. 3	1. 2. 34. 18	2. 23. 4	2. 57. 8
Tu.	10	1. 9. 58. 38	1. 17. 21. 3	3. 28. 6	3. 55. 25
W.	11	1. 24. 40. 30	2. 1. 56. 3	4. 18. 37	4. 37. 23
Th.	12	2. 9. 6. 51	2. 16. 12. 10	4. 51. 32	5. 0. 58
F.	13	2. 23. 11. 27	3. 0. 4. 17	5. 5. 44	5. 5. 59
Sa.	14	3. 6. 50. 27	3. 13. 29. 54	5. 1. 54	4. 53. 46
Sun.	15	3. 20. 2. 44	3. 26. 29. 11	4. 41. 53	4. 26. 33
M.	16	4. 2. 49. 37	4. 9. 4. 30	4. 8. 9	3. 47. 2
Tu.	17	4. 15. 14. 23	4. 21. 19. 52	3. 23. 31	2. 57. 57
W.	18	4. 27. 21. 36	5. 3. 20. 16	2. 30. 39	2. 1. 54
Th.	19	5. 9. 16. 33	5. 15. 11. 8	1. 32. 1	1. 1. 19 S
F.	20	5. 21. 4. 43	5. 26. 57. 56	0. 30. 4 S	0. 1. 28 N
Sa.	21	6. 2. 51. 26	6. 8. 45. 48	0. 32. 58 N	1. 4. 10
Sun.	22	6. 14. 41. 35	6. 20. 39. 17	1. 34. 46	2. 4. 26
M.	23	6. 26. 39. 20	7. 2. 42. 8	2. 32. 52	2. 59. 45
Tu.	24	7. 8. 47. 59	7. 14. 57. 6	3. 24. 46	3. 47. 35
W.	25	7. 21. 9. 41	7. 27. 25. 49	4. 7. 53	4. 25. 21
Th.	26	8. 3. 45. 32	8. 10. 8. 47	4. 39. 42	4. 50. 41
F.	27	8. 16. 35. 30	8. 23. 5. 34	4. 58. 3	5. 1. 38
Sa.	28	8. 29. 38. 49	9. 6. 15. 5	5. 1. 16	4. 56. 53
Sun.	29	9. 12. 54. 12	9. 19. 36. 0	4. 48. 26	4. 35. 58
M.	30	9. 26. 20. 20	10. 3. 7. 5	4. 19. 35	3. 59. 26

Days of the Month.	Age.	Pass. Mer.	The MOON's Right Ascension.		Declination.	
			Noon.	*Midnight.*	*Noon.*	*Midnight.*
	D.	H. M.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
1	6	3. 54	272. 55. 16	279. 46. 26	18. 17. 7 S	18. 4. 58 S
2	7	4. 47	286. 40. 0	293. 35. 8	17. 38. 4	16. 56. 27
3	8	5. 41	300. 31. 1	307. 27. 2	16. 0. 19	14. 50. 13
4	9	6. 34	314. 22. 48	321. 18. 7	13. 26. 49	11. 51. 3
5	10	7. 27	328. 12. 58	335. 7. 37	10. 4. 4	8. 7. 16
6	11	8. 21	342. 2. 28	348. 58. 4	6. 2. 11	3. 50. 36 S
7	12	9. 14	355. 55. 8	2. 54. 2	1. 34. 27 S	0. 44. 7 N
8	13	10. 9	9. 56. 19	17. 1. 42	3. 2. 50 N	5. 19. 21
9	14	11. 4	24. 10. 52	31. 23. 58	7. 31. 14	9. 36. 4
10	15	12. 1	38. 40. 52	46. 1. 6	11. 31. 32	13. 15. 31
11	16	12. 58	53. 23. 46	60. 47. 42	14. 46. 11	16. 2. 1
12	17	13. 55	68. 11. 26	75. 33. 18	17. 1. 54	17. 45. 12
13	18	14. 51	82. 51. 33	90. 4. 30	18. 11. 41	18. 21. 34
14	19	15. 44	97. 10. 39	104. 8. 47	18. 15. 25	17. 54. 8
15	20	16. 36	110. 58. 0	117. 37. 49	17. 18. 47	16. 30. 36
16	21	17. 24	124. 8. 5	130. 28. 58	15. 30. 54	14. 20. 59
17	22	18. 10	136. 40. 57	142. 44. 45	13. 2. 6	11. 35. 31
18	23	18. 54	148. 41. 19	154. 31. 33	10. 2. 23	8. 23. 44
19	24	19. 36	160. 16. 43	165. 57. 56	6. 40. 37	4. 53. 59
20	25	20. 18	171. 36. 28	177. 13. 33	3. 4. 45 N	1. 13. 49 N
21	26	21. 0	182. 50. 24	188. 28. 15	0. 37. 59 S	2. 29. 38 S
22	27	21. 43	194. 8. 18	199. 51. 36	4. 20. 19	6. 9. 0
23	28	22. 28	205. 39. 20	211. 32. 20	7. 54. 41	9. 36. 16
24	29	23. 14	217. 31. 29	223. 37. 27	11. 12. 34	12. 42. 24
25	1	♂	229. 50. 42	236. 11. 28	14. 4. 29	15. 17. 34
26	2	0. 3	242. 39. 44	249. 15. 12	16. 20. 23	17. 11. 42
27	3	0. 53	255. 57. 17	262. 45. 10	17. 50. 23	18. 15. 29
28	4	1. 46	269. 37. 46	276. 33. 50	18. 26. 15	18. 22. 7
29	5	2. 39	283. 32. 5	290. 31. 15	18. 2. 49	17. 28. 23
30	6	3. 32	297. 30. 7	304. 27. 44	16. 39. 5	15. 35. 29

Days of the Week.	Days of the Month.	The MOON's Semidiameter.		Hor. Parallax.		Proportional Logarithm.	
		Noon.	*Midnight.*	*Noon.*	*Midnight.*		
		M. S.	M. S.	M. S.	M. S.	*Noon.*	*Midn.*
Sun.	1	15. 26	15. 31	56. 39	56. 55	5021	5000
M.	2	15. 35	15. 40	57. 13	57. 31	4977	4955
Tu.	3	15. 46	15. 51	57. 50	58. 10	4931	4906
W.	4	15. 56	16. 2	58. 29	58. 49	4882	4858
Th.	5	16. 7	16. 12	59. 8	59. 26	4834	4812
F.	6	16. 16	16. 20	59. 42	59. 57	4793	4775
Sa.	7	16. 24	16. 27	60. 10	60. 21	4759	4746
Sun.	8	16. 29	16. 29	60. 28	60. 31	4738	4734
M.	9	16. 29	16. 28	60. 31	60. 27	4734	4739
Tu.	10	16. 26	16. 23	60. 19	60. 7	4748	4763
W.	11	16. 19	16. 14	59. 52	59. 33	4781	4804
Th.	12	16. 8	16. 2	59. 12	58. 49	4830	4858
F.	13	15. 55	15. 48	58. 24	57. 58	4889	4921
Sa.	14	15. 41	15. 33	57. 32	57. 5	4954	4988
Sun.	15	15. 26	15. 20	56. 39	56. 15	5021	5051
M.	16	15. 13	15. 7	55. 51	55. 30	5082	5110
Tu.	17	15. 2	14. 58	55. 11	54. 54	5135	5157
W.	18	14. 53	14. 50	54. 39	54. 27	5177	5193
Th.	19	14. 48	14. 46	54. 18	54. 11	5205	5214
F.	20	14. 45	14. 45	54. 7	54. 6	5219	5221
Sa.	21	14. 45	14. 46	54. 7	54. 10	5219	5215
Sun.	22	14. 47	14. 49	54. 15	54. 22	5209	5199
M.	23	14. 51	14. 54	54. 31	54. 41	5187	5174
Tu.	24	14. 57	15. 1	54. 53	55. 6	5158	5141
W.	25	15. 5	15. 9	55. 20	55. 34	5123	5105
Th.	26	15. 13	15. 17	55. 49	56. 4	5085	5066
F.	27	15. 21	15. 25	56. 19	56. 34	5046	5027
Sa.	28	15. 29	15. 33	56. 49	57. 3	5008	4990
Sun.	29	15. 37	15. 40	57. 17	57. 31	4972	4955
M.	30	15. 44	15. 48	57. 45	57. 58	4937	4921

DISTANCES of the MOON's *Centre* from the SUN, and from STARS *EAST* of her.

Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
α Pegasi.	1	77. 18. 20	75. 46. 26	74. 14. 24	72. 42. 15	71. 9. 58	69. 37. 35	68. 5. 6	66. 32. 33
	2	64. 59. 54	63. 27. 10	61. 54. 24	60. 21. 37	58. 48. 48	57. 15. 59	55. 43. 12	54. 10. 29
	3	52. 37. 53	51. 5. 21	49. 33. 0	48. 0. 53	46. 29. 1	44. 57. 29	43. 26. 19	41. 55. 35
	4	40. 25. 18	- - -	- - -	- - -	- - -	- - -	- - -	- - -
α Arietis.	4	81. 48. 55	80. 8. 2	78. 26. 54	76. 45. 30	75. 3. 51	73. 21. 58	71. 39. 51	69. 57. 31
	5	68. 14. 58	66. 32. 12	64. 49. 15	63. 6. 7	61. 22. 49	59. 39. 21	57. 55. 45	56. 12. 3
	6	54. 28. 16	52. 44. 23	51. 0. 29	49. 16. 36	47. 32. 45	45. 48. 55	44. 5. 12	42. 21. 42
	7	40. 38. 28	38. 55. 33	37. 13. 1	35. 30. 55	33. 49. 21	- - -	- - -	- - -
Aldebaran.	7	- - -	- - -	- - -	- - -	64. 31. 55	62. 41. 8	60. 50. 14	58. 59. 11
	8	57. 8. 0	55. 16. 43	53. 25. 21	51. 33. 55	49. 42. 24	47. 50. 50	45. 59. 16	44. 7. 41
	9	42. 16. 5	40. 24. 30	38. 32. 59	36. 41. 31	34. 50. 6	32. 58. 46	31. 7. 34	29. 16. 28
	10	27. 25. 30	- - -	- - -	- - -	- - -	- - -	- - -	- - -
Pollux.	10	71. 29. 16	69. 40. 52	67. 52. 41	66. 4. 44	64. 17. 4	62. 29. 41	60. 42. 37	58. 55. 53
	11	57. 9. 31	55. 23. 31	53. 37. 56	51. 52. 47	50. 8. 7	48. 23. 55	46. 40. 15	44. 57. 8
	12	43. 14. 38	41. 32. 46	39. 51. 35	38. 11. 6	36. 31. 22	- - -	- - -	- - -
Regulus.	12	- - -	- - -	- - -	- - -	71. 22. 39	69. 37. 47	67. 53. 20	66. 9. 17
	13	64. 25. 38	62. 42. 24	60. 59. 34	59. 17. 10	57. 35. 10	55. 53. 35	54. 12. 26	52. 31. 42
	14	50. 51. 23	49. 11. 30	47. 32. 2	45. 52. 59	44. 14. 21	42. 36. 8	40. 58. 19	39. 20. 55
	15	37. 43. 56	- - -	- - -	- - -	- - -	- - -	- - -	- - -

Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
Spica ♍.	15	91. 14. 35	89. 37. 54	88. 1. 35	86. 25. 39	84. 50. 5	83. 14. 52	81. 40. 0	80. 5. 29
	16	78. 31. 18	76. 57. 27	75. 23. 55	73. 50. 42	72. 17. 47	70. 45. 10	69. 12. 50	67. 40. 47
	17	66. 9. 0	- - -	- - -	- - -	- - -	- - -	- - -	- - -
The Sun.	15	- - -	121. 14. 10	119. 45. 30	118. 17. 11	116. 49. 14	115. 21. 38	113. 54. 22	112. 27. 26
	16	111. 0. 51	109. 34. 35	108. 8. 38	106. 43. 0	105. 17. 39	103. 52. 36	102. 27. 49	101. 3. 18
	17	99. 39. 4	98. 15. 5	96. 51. 21	95. 27. 51	94. 4. 35	92. 41. 32	91. 18. 41	89. 56. 1
	18	88. 33. 34	87. 11. 17	85. 49. 10	84. 27. 12	83. 5. 24	81. 43. 44	80. 22. 11	79. 0. 45
	19	77. 39. 26	76. 18. 13	74. 57. 6	73. 36. 3	72. 15. 5	70. 54. 10	69. 33. 18	68. 12. 29
	20	66. 51. 42	65. 30. 57	64. 10. 13	62. 49. 30	61. 28. 47	60. 8. 3	58. 47. 18	57. 26. 32
	21	56. 5. 44	54. 44. 54	53. 24. 1	52. 3. 5	50. 42. 6	49. 21. 3	47. 59. 56	46. 38. 45
	22	45. 17. 29	43. 56. 8	42. 34. 42	41. 13. 10	39. 51. 33	- - -	- - -	- - -
Fomalhaut.	28	- - -	- - -	- - -	- - -	60. 3. 11	58. 34. 59	57. 6. 57	55. 39. 8
	29	54. 11. 35	52. 44. 22	51. 17. 34	49. 51. 14	48. 25. 22	47. 0. 1	45. 35. 21	44. 11. 27
	30	42. 48. 22	41. 26. 9	40. 4. 58	38. 45. 3	37. 26. 32	36. 9. 33	34. 54. 15	33. 40. 48
	D.1	32. 29. 19	- - -	- - -	- - -	- - -	- - -	- - -	- - -

DISTANCES of the MOON'S *Centre* from the SUN, and from STARS *WEST* of her.

Stars' Names	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
The Sun.	1	54. 8. 16	55. 37. 55	57. 7. 47	58. 37. 53	60. 8. 12	61. 38. 45	63. 9. 33	64. 40. 36
	2	66. 11. 53	67. 43. 26	69. 15. 14	70. 47. 18	72. 19. 37	73. 52. 11	75. 25. 2	76. 58. 8
	3	78. 31. 31	80. 5. 10	81. 39. 6	83. 13. 18	84. 47. 48	86. 22. 35	87. 57. 39	89. 33. 0
	4	91. 8. 39	92. 44. 35	94. 20. 48	95. 57. 18	97. 34. 6	99. 11. 12	100. 48. 35	102. 26. 15
	5	104. 4. 13	105. 42. 28	107. 21. 0	108. 59. 48	110. 38. 54	112. 18. 16	113. 57. 53	115. 37. 47
	6	117. 17. 56	118. 58. 20	120. 38. 59	- - -	- - -	- - -	- - -	- - -
Antares.	4	66. 2. 22	67. 44. 22	69. 26. 42	71. 9. 21	72. 52. 20	74. 35. 38	76. 19. 15	78. 3. 10
	5	79. 47. 25	81. 31. 58	83. 16. 48	85. 1. 56	86. 47. 22	88. 33. 4	90. 19. 3	92. 5. 18
	6	93. 51. 49	95. 38. 36	97. 25. 37	99. 12. 52	101. 0. 21	102. 48. 3	104. 35. 57	106. 24. 2
	7	108. 12. 19	- - -	- - -	- - -	- - -	- - -	- - -	- - -
α Aquilæ.	7	60. 55. 48	62. 32. 31	64. 9. 47	65. 47. 36	67. 25. 54	69. 4. 39	70. 43. 48	72. 23. 20
	8	74. 3. 12	75. 43. 21	77. 23. 45	79. 4. 23	80. 45. 10	- - -	- - -	- - -
Fomalhaut.	8	- - -	- - -	- - -	- - -	49. 1. 28	50. 36. 58	52. 13. 13	53. 50. 10
	9	55. 27. 44	57. 5. 52	58. 44. 31	60. 23. 36	62. 3. 4	63. 42. 48	65. 22. 49	67. 3. 2
	10	68. 43. 26	70. 23. 57	72. 4. 32	73. 45. 9	75. 25. 44	- - -	- - -	- - -
α Pegasi.	10	- - -	- - -	- - -	- - -	59. 58. 57	61. 41. 18	63. 23. 41	65. 6. 3
	11	66. 48. 23	68. 30. 39	70. 12. 49	71. 54. 51	73. 36. 44	75. 18. 26	76. 59. 55	78. 41. 9
	12	80. 22. 7	- - -	- - -	- - -	- - -	- - -	- - -	- - -

Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
	12	36. 48. 39	38. 27. 37	40. 6. 45	41. 45. 59	43. 25. 16	45. 4. 34	46. 43. 50	48. 23. 2
α Arietis.	13	50. 2. 8	51. 41. 1	53. 19. 44	54. 58. 14	56. 36. 31	58. 14. 32	59. 52. 17	61. 29. 46
	14	63. 6. 57	64. 43. 50	66. 20. 25	67. 56. 40	69. 32. 34	- - -	- - -	- - -
	14	- - -	- - -	- - -	- - -	35. 56. 4	37. 34. 33	39. 12. 38	40. 50. 20
	15	42. 27. 38	44. 4. 33	45. 41. 7	47. 17. 18	48. 53. 7	50. 28. 34	52. 3. 41	53. 38. 27
Aldebaran.	16	55. 12. 53	56. 46. 59	58. 20. 46	59. 54. 15	61. 27. 26	63. 0. 19	64. 32. 55	66. 5. 15
	17	67. 37. 19	69. 9. 7	70. 40. 41	72. 12. 0	73. 43. 6	75. 13. 58	76. 44. 39	78. 15. 8
	18	79. 45. 26	- - -	- - -	- - -	- - -	- - -	- - -	- - -
	18	37. 33. 54	38. 59. 23	40. 24. 59	41. 50. 39	43. 16. 26	44. 42. 17	46. 8. 12	47. 34. 11
	19	49. 0. 13	50. 26. 17	51. 52. 23	53. 18. 32	54. 44. 44	56. 10. 57	57. 37. 14	59. 3. 32
Pollux.	20	60. 29. 54	61. 56. 18	63. 22. 46	64. 49. 18	66. 15. 51	67. 42. 29	69. 9. 11	70. 35. 58
	21	72. 2. 49	- - -	- - -	- - -	- - -	- - -	- - -	- - -
	21	35. 23. 31	36. 52. 1	38. 20. 35	39. 49. 15	41. 18. 0	42. 46. 50	44. 15. 47	45. 44. 51
	22	47. 14. 1	48. 43. 18	50. 12. 44	51. 42. 17	53. 11. 58	54. 41. 47	56. 11. 46	57. 41. 53
Regulus.	23	59. 12. 10	60. 42. 36	62. 13. 12	63. 43. 59	65. 14. 56	- - -	- - -	- - -
	29	- - -	- - -	39. 10. 26	40. 42. 17	42. 14. 21	43. 46. 38	45. 19. 7	46. 51. 49
	30	48. 24. 43	49. 57. 48	51. 31. 5	53. 4. 33	54. 38. 13	56. 12. 3	57. 46. 5	59. 20. 16
The Sun.	D. 1	60. 54. 39	- - -	- - -	- - -	- - -	- - -	- - -	- - -

CONFIGURATIONS of the SATELLITES of JUPITER, at V o'Clock in the *Evening*.

1					·4			·2	·1		○					·3					
2	3.●						·4	·2			○				1·						
3						3·			·1		○		·4		·2						
4					·3						○		1·				·4				2.●
5							·2	·3		·1	○								·4		
6	1.●										○		·2	·3						·4	
7											○		·1		2·		·3				4·
8									2·1·		○						3·			4·	
9								·2			○	3·		·1					4·		
10						3·			·1		○				·2		4·				
11					·3						○		2·	1·							4.●
12							2	6	3	6	4	·1	○								
13				4·							○		·3							.2○	1.●
14			4·								○		·1			2·		·3			
15		4·							2·1·		○							3·			
16		·4						·2			○			·1	3·						
17			·4						3·	1·	○				·2						
18					3·	4					○		2·	1·							
19						·3	2·	4	6	1	○										
20										·2	○	1·		·4							.3○

Not visible the rest of this Month.

Days of the Week.	Days of the Month.	*Sundays, and other remarkable Days.*
Tu.	1	
W.	2	
Th.	3	
F.	4	
Sa.	5	
Sun.	6	*2d Sunday in Advent.*
M.	7	[Nicolas.
Tu.	8	Conception of B. V. Mary.
W.	9	
Th.	10	
F.	11	
Sa.	12	
Sun.	13	*3d Sun. in Advent.* Lucy.
M.	14	
Tu.	15	
W.	16	Camb. Term ends. O Sap.
Th.	17	Oxf. Term ends.
F.	18	
Sa.	19	
Sun.	20	*4th Sunday in Advent.*
M.	21	*St. Thomas.*
Tu.	22	
W.	23	
Th.	24	
F.	25	*Christmas Day.*
Sa.	26	*St. Stephen.*
Sun.	27	*1st Sund. after Christmas.*
M.	28	*Innocents.* [*St. John.*
Tu.	29	
W.	30	
Th.	31	Silvester.

Phases of the MOON.

	D.	H.	M.
☽ *First Quarter* . . .	3.	6.	33
○ Full Moon	10.	1.	38
☾ *Last Quarter* . . .	17.	18.	4
● New Moon	25.	15.	36

Other *Phenomena.*

D.	H.	M.	
2.	2.	-	☿ ☌ ♎.
2.	12.	-	☽ ☍ ♒.
3.	9.	-	♂ ☌ ♏.
4.	2.	-	☿ 1 ☍ ♏.
4.	2.	-	☿ 2 ☍ ♏.
6.	8.	-	☽ ☍ ♓.
9.	1.	-	☽ ☌ ♉.
9.	2.	-	☽ 1 ☍ ♉.
9.	2.	-	☽ 2 ☍ ♉.
9.	7.	-	☽ ☌ ♉.
14.	16.	-	☽ ☐ ♌.
14.	21.	-	☽ ☍ ♌.
15.	15.	-	☿ ☍ Oph.
15.	19.	-	♂ 2 ☌ ♎.
15.	21.	-	♀ ☍ ♑.
16.	7.	-	☿ *B* Oph.
17.	4.	-	☽ ☍ ♌.
17.	16.	-	☽ ☍ ♏.
18.	7.	-	☽ ☍ ♏.
19.	10.	-	☽ ☍ ♏.
20.	19.	-	☽ ☍ ♏.
21.	13.	19	☉ enters ♑.
22.	11.	-	☽ ☌ ♎.
22.	20.	-	☽ ☍ ♎.
23.	13.	-	☽ ☍ Oph.
23.	23.	-	♀ ☌ ♑.
25.	17.	-	♀ ☌ ♑.
27.	15.	-	☽ ☍ ♑.
29.	17.	-	☽ ☍ ♒.
31.	18.	-	☿ ☿ ♐.

Days of the Week.	Days of the Month.	The SUN's Longitude.	Rt. Ascen. *in Time.*	Declin. *South.*	Diff.	Equation of Time. *Sub. from app. Time.*	Diff.
		S. D. M. S.	H. M. S.	D. M. S.	M.S.	M. S.	S.
Tu.	1	8. 9. 5. 16	16. 29. 32, 7	21. 49. 52	9. 6	10. 42, 8	23, 1
W.	2	8. 10. 6. 11	16. 33. 52, 4	21. 58. 58	8. 42	10. 19, 7	23, 6
Th.	3	8. 11. 7. 7	16. 38. 12, 7	22. 7. 40	8. 15	9. 56, 1	24, 3
F.	4	8. 12. 8. 3	16. 42. 33, 6	22. 15. 55	7. 50	9. 31, 8	24, 8
Sa.	5	8. 13. 9. 1	16. 46. 55, 0	22. 23. 45	7. 23	9. 7, 0	25, 3
Sun.	6	8. 14. 9. 59	16. 51. 16, 9	22. 31. 8	6. 57	8. 41, 7	25, 8
M.	7	8. 15. 10. 57	16. 55. 39, 4	22. 38. 5	6. 30	8. 15, 9	26, 3
Tu.	8	8. 16. 11. 57	17. 0. 2, 3	22. 44. 35	6. 4	7. 49, 6	26, 7
W.	9	8. 17. 12. 57	17. 4. 25, 6	22. 50. 39	5. 36	7. 22, 9	27, 1
Th.	10	8. 18. 13. 58	17. 8. 49, 4	22. 56. 15	5. 9	6. 55, 8	27, 6
F.	11	8. 19. 14. 59	17. 13. 13, 6	23. 1. 24	4. 42	6. 28, 2	28, 0
Sa.	12	8. 20. 16. 2	17. 17. 38, 2	23. 6. 6	4. 14	6. 0, 2	28, 3
Sun.	13	8. 21. 17. 5	17. 22. 3, 2	23. 10. 20	3. 47	5. 31, 9	28, 6
M.	14	8. 22. 18. 10	17. 26. 28, 5	23. 14. 7	3. 18	5. 3, 3	29, 0
Tu.	15	8. 23. 19. 15	17. 30. 54, 0	23. 17. 25	2. 51	4. 34, 3	29, 2
W.	16	8. 24. 20. 21	17. 35. 19, 9	23. 20. 16	2. 23	4. 5, 1	29, 4
Th.	17	8. 25. 21. 27	17. 39. 45, 9	23. 22. 39	1. 55	3. 35, 7	29, 7
F.	18	8. 26. 22. 35	17. 44. 12, 2	23. 24. 34	1. 26	3. 6, 0	29, 8
Sa.	19	8. 27. 23. 44	17. 48. 38, 7	23. 26. 0	0. 58	2. 36, 2	29, 9
Sun.	20	8. 28. 24. 53	17. 53. 5, 3	23. 26. 58	0. 30	2. 6, 3	30, 1
M.	21	8. 29. 26. 3	17. 57. 32, 0	23. 27. 28	0. 2	1. 36, 2	30, 1
Tu.	22	9. 0. 27. 14	18. 1. 58, 8	23. 27. 30	0. 27	1. 6, 1	30, 2
W.	23	9. 1. 28. 26	18. 6. 25, 6	23. 27. 3	0. 55	0. 35, 9	30, 1
Th.	24	9. 2. 29. 37	18. 10. 52, 3	23. 26. 8	1. 24	0. 5, 8	30, 1
F.	25	9. 3. 30. 49	18. 15. 19, 1	23. 24. 44	1. 51	*Add.* 0. 24, 3	30, 0
Sa.	26	9. 4. 32. 2	18. 19. 45, 7	23. 22. 53	2. 20	0. 54, 3	29, 9
Sun.	27	9. 5. 33. 15	18. 24. 12, 2	23. 20. 33	2. 49	1. 24, 2	29, 7
M.	28	9. 6. 34. 27	18. 28. 38, 6	23. 17. 44	3. 16	1. 53, 9	29, 5
Tu.	29	9. 7. 35. 40	18. 33. 4, 7	23. 14. 28	3. 44	2. 23, 4	29, 3
W.	30	9. 8. 36. 52	18. 37. 30, 6	23. 10. 44	4. 12	2. 52, 7	29, 0
Th.	31	9. 9. 38. 5	18. 41. 56, 2	23. 6. 32	4. 40	3. 21, 7	28, 7

Days	Time of ⊙'s Semidiam. passing Merid.	The SUN's Semi-diameter.	The SUN's Hourly Motion.	The SUN's Logar. Distance.	Place of the ☽'s Node.
	M. S.	M. S.	M. S.		S. D. M.
1	1. 10, 0	16. 15, 5	2. 32, 2	9. 993666	5. 24. 38
7	1. 10, 5	16. 16, 3	2. 32, 4	9. 993289	5. 24. 19
13	1. 10, 8	16. 16, 9	2. 32, 6	9. 993005	5. 24. 0
19	1. 10, 9	16. 17, 4	2. 32, 8	9. 992817	5. 23. 41
25	1. 11, 0	16. 17, 7	2. 32, 9	9. 992703	5. 23. 22

The ECLIPSES of the SATELLITES of JUPITER are not visible this Month, Jupiter being too near the Sun.

Days	THE PLANETS' Heliocentric Long.	Heliocentric Lat.	Geocentric Long.	Geocentric Lat.	Declin.	Rt. Asc. in Time.	Passage Merid.
	S. D. M.	D.M.	S. D. M.	D.M.	D. M.	H. M.	H. M.
	☿		*MERCURY.*			Sup. ☌ 24d. 13½h.	
1	6. 25. 30	2. 30 N	7. 26. 16	0. 48N	18. 33 S	15. 37	23. 9
4	7. 5. 0	1. 23	8. 0. 53	0. 27	19. 55	15. 55	23. 15
7	7. 14. 1	0. 17N	8. 5. 32	0. 5N	21. 9	16. 15	23. 21
10	7. 22. 41	0. 47 S	8. 10. 11	0. 15 S	22. 15	16. 34	23. 27
13	8. 1. 6	1. 48	8. 14. 51	0. 35	23. 11	16. 54	23. 34
16	8. 9. 23	2. 45	8. 19. 33	0. 54	23. 56	17. 14	23. 41
19	8. 17. 37	3. 39	8. 24. 16	1. 11	24. 31	17. 35	23. 49
22	8. 25. 55	4. 29	8. 29. 0	1. 26	24. 53	17. 56	23. 56
25	9. 4. 20	5. 13	9. 3. 46	1. 40	25. 4	18. 17	0. 2
28	9. 13. 0	5. 52	9. 8. 36	1. 51	25. 2	18. 38	0. 9
31	9. 22. 1	6. 23	9. 13. 27	2. 0	24. 45	19. 0	0. 18
	♀		*VENUS.*			Gr. Elong. 26d.	
1	0. 11. 23	3. 3 S	9. 24. 45	2. 35 S	23. 44 S	19. 49	3. 19
7	0. 20. 58	2. 45	10. 1. 29	2. 27	22. 14	20. 17	3. 22
13	1. 0. 33	2. 23	10. 8. 4	2. 15	20. 26	20. 44	3. 22
19	1. 10. 9	1. 57	10. 14. 31	1. 57	18. 21	21. 10	3. 22
25	1. 19. 47	1. 27	10. 20. 46	1. 33	16. 3	21. 35	3. 19
	♂		*MARS.*				
1	6. 11. 59	1. 6N	7. 2. 55	0. 46N	11. 46 S	14. 4	21. 33
7	6. 14. 44	1. 1	7. 6. 50	0. 44	13. 7	14. 19	21. 22
13	6. 17. 30	0. 57	7. 10. 46	0. 41	14. 25	14. 34	21. 11
19	6. 20. 17	0. 52	7. 14. 43	0. 38	15. 39	14. 50	21. 0
25	6. 23. 6	0. 47	7. 18. 40	0. 35	16. 50	15. 6	20. 49
	♃		*JUPITER.*			☌ 18d. 2½h.	
1	8. 25. 5	0. 19N	8. 22. 35	0. 16N	22. 59 S	17. 28	0. 58
7	8. 25. 34	0. 18	8. 23. 56	0. 15	23. 4	17. 34	0. 38
13	8. 26. 4	0. 17	8. 25. 19	0. 15	23. 8	17. 40	0. 17
19	8. 26. 33	0. 17	8. 26. 41	0. 14	23. 11	17. 46	23. 53
25	8. 27. 2	0. 16	8. 28. 4	0. 13	23. 13	17. 52	23. 33
	♄		*SATURN.*				
1	4. 12. 25	0. 52N	4. 18. 13	0. 54N	16. 15N	9. 24	16. 51
7	4. 12. 39	0. 52	4. 18. 9	0. 55	16. 17	9. 24	16. 25
13	4. 12. 52	0. 53	4. 18. 2	0. 56	16. 20	9. 23	15. 58
19	4. 13. 5	0. 53	4. 17. 50	0. 58	16. 25	9. 22	15. 31
25	4. 13. 18	0. 54	4. 17. 35	0. 59	16. 30	9. 21	15. 3
	♅		*GEORGIAN.*				
1	10. 5. 48	0. 37 S	10. 3. 29	0. 36 S	19. 58 S	20. 24	3. 54
11	10. 5. 55	0. 37	10. 3. 55	0. 36	19. 52	20. 26	3. 12
21	10. 6. 1	0. 37	10. 4. 23	0. 36	19. 45	20. 28	2. 30
31	10. 6. 8	0. 37	10. 4. 55	0. 35	19. 38	20. 30	1. 47

Days of the Week.	Days of the Month.	THE MOON's Longitude. Noon.	Longitude. Midnight.	Latitude. Noon.	Latitude. Midnight.
		S. D. M. S.	S. D. M. S.	D. M. S.	D. M. S.
Tu.	1	10. 9. 56. 9	10. 16. 47. 29	3. 35. 45 N	3. 8. 48 N
W.	2	10. 23. 41. 2	11. 0. 36. 48	2. 38. 56	2. 6. 34
Th.	3	11. 7. 34. 47	11. 14. 34. 58	1. 32. 7	0. 56. 5 N
F.	4	11. 21. 37. 20	11. 28. 41. 50	0. 19. 2 N	0. 18. 30 S
Sa.	5	0. 5. 48. 21	0. 12. 56. 41	0. 55. 54 S	1. 32. 33
Sun.	6	0. 20. 6. 36	0. 27. 17. 44	2. 7. 50	2. 41. 9
M.	7	1. 4. 29. 36	1. 11. 41. 40	3. 11. 55	3. 39. 37
Tu.	8	1. 18. 53. 18	1. 26. 3. 46	4. 3. 44	4. 23. 54
W.	9	2. 3. 12. 20	2. 10. 18. 16	4. 39. 49	4. 51. 15
Th.	10	2. 17. 20. 51	2. 24. 19. 22	4. 58. 9	5. 0. 30
F.	11	3. 1. 13. 18	3. 8. 2. 7	4. 58. 25	4. 52. 3
Sa.	12	3. 14. 45. 27	3. 21. 23. 6	4. 41. 41	4. 27. 37
Sun.	13	3. 27. 55. 0	4. 4. 21. 12	4. 10. 12	3. 49. 48
M.	14	4. 10. 41. 53	4. 16. 57. 20	3. 26. 47	3. 1. 32
Tu.	15	4. 23. 7. 59	4. 29. 14. 19	2. 34. 26	2. 5. 51
W.	16	5. 5. 16. 52	5. 11. 16. 18	1. 36. 6	1. 5. 30
Th.	17	5. 17. 13. 14	5. 23. 8. 23	0. 34. 23 S	0. 3. 1 S
F.	18	5. 29. 2, 27	6. 4. 56. 8	0. 28. 16 N	0. 59. 12 N
Sa.	19	6. 10. 50. 9	6. 16. 45. 12	1. 29. 31	1. 58. 58
Sun.	20	6. 22. 41. 56	6. 28. 40. 58	2. 27. 13	2. 54. 1
M.	21	7. 4. 42. 54	7. 10. 48. 14	3. 19. 3	3. 42. 2
Tu.	22	7. 16. 57. 27	7. 23. 10. 54	4. 2. 39	4. 20. 37
W.	23	7. 29. 28. 51	8. 5. 51. 31	4. 35. 36	4. 47. 20
Th.	24	8. 12. 18. 57	8. 18. 51. 9	4. 55. 33	4. 59. 59
F.	25	8. 25. 27. 58	9. 2. 9. 11	5. 0. 27	4. 56. 49
Sa.	26	9. 8. 54. 29	9. 15. 43. 28	4. 49. 0	4. 37. 0
Sun.	27	9. 22. 35. 43	9. 29. 30. 45	4. 20. 53	4. 0. 47
M.	28	10. 6. 28. 5	10. 13. 27. 16	3. 36. 59	3. 9. 47
Tu.	29	10. 20. 27. 53	10. 27. 29. 30	2. 39. 35	2. 6. 50
W.	30	11. 4. 31. 49	11. 11. 34. 33	1. 32. 4	0. 55. 49 N
Th.	31	11. 18. 37. 30	11. 25. 40. 29	0. 18. 40 N	0. 18. 49 S

Days of the Month.	Age.	Pass. Merid.	THE MOON's Right Ascension.		Declination.	
			Noon.	*Midnight.*	*Noon.*	*Midnight.*
	D.	H. M.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
1	6	4. 25	311. 23. 21	318. 16. 32	14. 18. 24 S	12. 48. 52 S
2	7	5. 18	325. 7. 9	331. 55. 21	11. 8. 6	9. 17. 27
3	8	6. 9	338. 41. 35	345. 26. 28	7. 18. 28	5. 12. 46
4	9	7. 1	352. 10. 51	358. 55. 39	3. 2. 2 S	0. 48. 6 S
5	10	7. 52	5. 41. 53	12. 30. 32	1. 27. 9 N	3. 41. 43 N
6	11	8. 45	19. 22. 29	26. 18. 28	5. 53. 35	8. 0. 41
7	12	9. 39	33. 19. 2	40. 24. 24	10. 0. 54	11. 52. 12
8	13	10. 34	47. 34. 26	54. 48. 34	13. 32. 40	15. 0. 29
9	14	11. 30	62. 5. 53	69. 25. 4	16. 14. 9	17. 12. 28
10	15	12. 26	76. 44. 32	84. 2. 28	17. 54. 33	18. 20. 1
11	16	13. 21	91. 17. 0	98. 26. 18	18. 28. 47	18. 21. 23
12	17	14. 14	105. 28. 47	112. 23. 13	17. 58. 27	17. 21. 3
13	18	15. 5	119. 8. 42	125. 44. 44	16. 30. 24	15. 27. 53
14	19	15. 52	132. 11. 13	138. 28. 24	14. 14. 55	12. 52. 52
15	20	16. 37	144. 36. 49	150. 37. 17	11. 23. 6	9. 46. 55
16	21	17. 21	156. 30. 46	162. 18. 23	8. 5. 31	6. 20. 2
17	22	18. 3	168. 1. 21	173. 40. 56	4. 31. 27	2. 40. 46 N
18	23	18. 45	179. 18. 28	184. 55. 16	0. 48. 50 N	1. 3. 26 S
19	24	19. 27	190. 32. 41	196. 12. 3	2. 55. 9 S	4. 45. 28
20	25	20. 10	201. 54. 37	207. 41. 36	6. 33. 28	8. 18. 11
21	26	20. 55	213. 34. 10	219. 33. 19	9. 58. 36	11. 33. 36
22	27	21. 42	225. 39. 56	231. 54. 42	13. 2. 2	14. 22. 37
23	28	22. 32	238. 18. 0	244. 50. 0	15. 34. 4	16. 35. 3
24	29	23. 24	251. 30. 30	258. 18. 56	17. 24. 16	18. 0. 29
25	1	0	265. 14. 25	272. 15. 43	18. 22. 36	18. 29. 43
26	2	0. 18	279. 21. 22	286. 29. 45	18. 21. 12	17. 56. 45
27	3	1. 13	293. 39. 13	300. 48. 13	17. 16. 25	16. 20. 36
28	4	2. 8	307. 55. 23	314. 59. 39	15. 10. 4	13. 45. 52
29	5	3. 1	322. 0. 20	328. 57. 4	12. 9. 21	10. 22. 3
30	6	3. 54	335. 49. 51	342. 39. 4	8. 25. 41	6. 22. 3
31	7	4. 46	349. 25. 17	356. 9. 20	4. 13. 1	2. 0. 30 S

Days of the Week.	Days of the Month.	The MOON's Semidiameter.		Hor. Parallax.		Proportional Logarithm.	
		Noon.	*Midnight.*	*Noon.*	*Midnight.*		
		M. S.	M. S.	M. S.	M. S.	*Noon.*	*Midn.*
Tu.	1	15. 52	15. 55	58. 10	58. 23	4906	4890
W.	2	15. 58	16. 1	58. 34	58. 45	4876	4863
Th.	3	16. 4	16. 6	58. 56	59. 6	4849	4837
F.	4	16. 9	16. 11	59. 15	59. 23	4826	4816
Sa.	5	16. 12	16. 14	59. 29	59. 34	4809	4803
Sun.	6	16. 15	16. 15	59. 37	59. 38	4799	4798
M.	7	16. 15	16. 14	59. 37	59. 33	4799	4804
Tu.	8	16. 12	16. 9	59. 26	59. 17	4812	4823
W.	9	16. 6	16. 2	59. 5	58. 51	4838	4855
Th.	10	15. 58	15. 53	58. 35	58. 17	4875	4897
F.	11	15. 47	15. 42	57. 57	57. 36	4922	4949
Sa.	12	15. 36	15. 30	57. 14	56. 52	4976	5004
Sun.	13	15. 24	15. 18	56. 30	56. 9	5032	5059
M.	14	15. 12	15. 7	55. 48	55. 29	5086	5111
Tu.	15	15. 2	14. 58	55. 11	54. 55	5135	5156
W.	16	14. 54	14. 51	54. 42	54. 30	5173	5189
Th.	17	14. 49	14. 47	54. 21	54. 15	5201	5209
F.	18	14. 46	14. 46	54. 12	54. 11	5213	5214
Sa.	19	14. 46	14. 47	54. 12	54. 16	5213	5207
Sun.	20	14. 49	14. 52	54. 24	54. 34	5197	5183
M.	21	14. 55	14. 59	54. 45	54. 59	5169	5150
Tu.	22	15. 3	15. 7	55. 14	55. 30	5131	5110
W.	23	15. 12	15. 18	55. 48	56. 7	5086	5062
Th.	24	15. 23	15. 28	56. 26	56. 45	5037	5013
F.	25	15. 33	15. 38	57. 4	57. 22	4989	4966
Sa.	26	15. 43	15. 47	57. 40	57. 56	4943	4923
Sun.	27	15. 51	15. 55	58. 11	58. 25	4905	4887
M.	28	15. 58	16. 1	58. 37	58. 47	4873	4860
Tu.	29	16. 3	16. 5	58. 55	59. 2	4850	4842
W.	30	16. 6	16. 7	59. 6	59. 10	4837	4832
Th.	31	16. 8	16. 8	59. 12	59. 13	4830	4828

DISTANCES of the Moon's *Centre* from the Sun, and from Stars *EAST* of her.

Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
	1	84. 48. 27	83. 8. 33	81. 28. 31	79. 48. 21	78. 8. 3	76. 27. 37	74. 47. 5	73. 6. 27
α Arietis.	2	71. 25. 42	69. 44. 51	68. 3. 55	66. 22. 55	64. 41. 51	63. 0. 43	61. 19. 33	59. 38. 21
	3	57. 57. 8	56. 15. 53	54. 34. 41	52. 53. 32	51. 12. 25	49. 31. 22	47. 50. 27	46. 9. 42
	4	44. 29. 8	42. 48. 48	41. 8. 45	39. 29. 0	37. 49. 35	- - -	- - -	- - -
	4	- - -	- - -	- - -	- - -	68. 47. 23	67. 0. 32	65. 13. 34	63. 26. 29
Aldebaran.	5	61. 39. 18	59. 52. 0	58. 4. 37	56. 17. 8	54. 29. 33	52. 41. 53	50. 54. 8	49. 6. 20
	6	47. 18. 27	45. 30. 31	43. 42. 32	41. 54. 32	40. 6. 29	38. 18. 25	36. 30. 20	34. 42. 16
	7	32. 54. 11	- - -	- - -	- - -	- - -	- - -	- - -	- - -
	7	76. 52. 34	75. 6. 40	73. 20. 50	71. 35. 4	69. 49. 22	68. 3. 46	66. 18. 19	64. 33. 1
Pollux.	8	62. 47. 51	61. 2. 51	59. 18. 5	57. 33. 31	55. 49. 11	54. 5. 6	52. 21. 19	50. 37. 50
	9	48. 54. 42	47. 11. 55	45. 29. 31	43. 47. 35	42. 6. 7	40. 25. 10	38. 44. 46	37. 4. 59
	10	35. 25. 48	- - -	- - -	- - -	- - -	- - -	- - -	- - -
	10	70. 14. 23	68. 29. 53	66. 45. 39	65. 1. 42	63. 18. 1	61. 34. 37	59. 51. 32	58. 8. 45
Regulus.	11	56. 26. 16	54. 44. 7	53. 2. 17	51. 20. 48	49. 39. 38	47. 58. 49	46. 18. 20	44. 38. 13
	12	42. 58. 26	41. 19. 0	39. 39. 57	38. 1. 14	36. 22. 54	- - -	- - -	- - -
	12	- - -	- - -	- - -	- - -	89. 55. 14	88. 17. 12	86. 39. 31	85. 2. 11
Spica $\mathfrak{m}$.	13	83. 25. 11	81. 48. 31	80. 12. 12	78. 36. 12	77. 0. 32	75. 25. 12	73. 50. 11	72. 15. 30
	14	70. 41. 7	69. 7. 4	67. 33. 18	65. 59. 51	64. 26. 42	62. 53. 50	61. 21. 15	59. 48. 56
	15	58. 16. 54	56. 45. 8	55. 13. 37	53. 42. 22	52. 11. 21	- - -	- - -	- - -

Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
Antares.	15	- - -	- - -	- - -	- - -	97. 56. 37	96. 26. 40	94. 56. 54	93. 27. 20
	16	91. 57. 57	90. 28. 45	88. 59. 43	87. 30. 51	86. 2. 9	84. 33. 36	83. 5. 12	81. 36. 55
	17	80. 8. 47	78. 40. 45	77. 12. 50	75. 45. 1	74. 17. 18	72. 49. 40	71. 22. 6	69. 54. 36
	18	68. 27. 11	- - -	- - -	- - -	- - -	- - -	- - -	- - -
The Sun.	15	120. 9. 15	118. 45. 12	117. 21. 23	115. 57. 48	114. 34. 26	113. 11. 17	111. 48. 20	110. 25. 35
	16	109. 3. 1	107. 40. 38	106. 18. 25	104. 56. 21	103. 34. 27	102. 12. 42	100. 51. 4	99. 29. 34
	17	98. 8. 12	96. 46. 56	95. 25. 45	94. 4. 39	92. 43. 38	91. 22. 41	90. 1. 47	88. 40. 56
	18	87. 20. 8	85. 59. 22	84. 38. 36	83. 17. 51	81. 57. 6	80. 36. 20	79. 15. 33	77. 54. 43
	19	76. 33. 52	75. 12. 57	73. 51. 59	72. 30. 56	71. 9. 49	69. 48. 36	68. 27. 18	67. 5. 53
	20	65. 44. 22	64. 22. 44	63. 0. 58	61. 39. 3	60. 17. 1	58. 54. 49	57. 32. 27	56. 9. 55
	21	54. 47. 13	53. 24. 21	52. 1. 17	50. 38. 2	49. 14. 36	47. 50. 57	46. 27. 6	45. 3. 3
	22	43. 38. 47	42. 14. 19	40. 49. 38	39. 24. 44	- - -	- - -	- - -	- - -
α Arietis.	28	88. 12. 49	86. 31. 1	84. 49. 7	83. 7. 6	81. 24. 58	79. 42. 45	78. 0. 29	76. 18. 10
	29	74. 35. 47	72. 53. 22	71. 10. 57	69. 28. 32	67. 46. 7	66. 3. 43	64. 21. 22	62. 39. 4
	30	60. 56. 50	59. 14. 40	57. 32. 38	55. 50. 45	54. 8. 59	52. 27. 23	50. 45. 59	49. 4. 50
	31	47. 23. 57	45. 43. 19	44. 3. 2	42. 23. 9	40. 43. 43	39. 4. 47	37. 26. 24	35. 48. 37
	J. 1	34. 11. 29	- - -	- - -	- - -	- - -	- - -	- - -	- - -

DISTANCES of the Moon's *Centre* from the Sun, and from Stars *WEST* of her.

Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
The Sun.	1	60. 54. 39	62. 29. 13	64. 3. 58	65. 38. 52	67. 13. 57	68. 49. 12	70. 24. 36	72. 0. 11
	2	73. 35. 56	75. 11. 51	76. 47. 55	78. 24. 10	80. 0. 34	81. 37. 8	83. 13. 51	84. 50. 43
	3	86. 27. 45	88. 4. 56	89. 42. 16	91. 19. 44	92. 57. 22	94. 35. 8	96. 13. 2	97. 51. 5
	4	99. 29. 16	101. 7. 35	102. 46. 1	104. 24. 35	106. 3. 17	107. 42. 5	109. 21. 0	111. 0. 1
	5	112. 39. 9	114. 18. 22	115. 57. 39	117. 37. 2	119. 16. 29	120. 56. 0	- - -	- - -
α Aquilæ.	3	- - -	- - -	- - -	- - -	51. 31. 22	53. 0. 41	54. 30. 47	56. 1. 37
	4	57. 33. 9	59. 5. 20	60. 38. 7	62. 11. 28	63. 45. 20	65. 19. 40	66. 54. 26	68. 29. 37
	5	70. 5. 11	71. 41. 5	73. 17. 17	74. 53. 46	76. 30. 29	- - -	- - -	- - -
Fomalhaut.	5	- - -	- - -	- - -	- - -	44. 54. 8	46. 24. 16	47. 55. 20	49. 27. 18
	6	51. 0. 5	52. 33. 37	54. 7. 51	55. 42. 43	57. 18. 8	58. 54. 1	60. 30. 21	62. 7. 5
	7	63. 44. 11	65. 21. 36	66. 59. 16	68. 37. 9	70. 15. 13	- - -	- - -	- - -
α Pegasi.	7	- - -	- - -	- - -	- - -	54. 47. 43	56. 26. 56	58. 6. 25	59. 46. 7
	8	61. 26. 1	63. 6. 5	64. 46. 16	66. 26. 33	68. 6. 55	69. 47. 18	71. 27. 42	73. 8. 4
	9	74. 48. 23	- - -	- - -	- - -	- - -	- - -	- - -	- - -
α Arietis.	9	31. 25. 15	33. 1. 34	34. 38. 29	36. 15. 56	37. 53. 50	39. 32. 8	41. 10. 44	42. 49. 36
	10	44. 28. 38	46. 7. 42	47. 46. 51	49. 26. 1	51. 5. 10	52. 44. 14	54. 23. 13	56. 2. 6
	11	57. 40. 51	59. 19. 25	60. 57. 48	62. 35. 59	64. 13. 59	65. 51. 45	67. 29. 15	69. 6. 30
	12	70. 43. 30	- - -	- - -	- - -	- - -	- - -	- - -	- - -

Stars' Names.	Days	*Noon.*	III^h.	VI^h.	IX^h.	*Midnight.*	XV^h.	XVIII^h.	XXI^h.
		D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	D. M. S.
Aldebaran.	12	37. 11. 47	38. 51. 26	40. 30. 45	42. 9. 43	43. 48. 21	45. 26. 38	47. 4. 35	48. 42. 12
	13	50. 19. 28	51. 56. 24	53. 33. 0	55. 9. 17	56. 45. 14	58. 20. 51	59. 56. 9	61. 31. 8
	14	63. 5. 48	64. 40. 10	66. 14. 14	67. 48. 0	69. 21. 29	70. 54. 41	72. 27. 36	74. 0. 16
	15	75. 32. 39	- - -	- - -	- - -	- - -	- - -	- - -	- - -
Pollux.	15	33. 30. 16	34. 56. 51	36. 23. 33	37. 50. 21	39. 17. 14	40. 44. 11	42. 11. 12	43. 38. 15
	16	45. 5. 19	46. 32. 22	47. 59. 25	49. 26. 27	50. 53. 28	52. 20. 26	53. 47. 23	55. 14. 19
	17	56. 41. 13	58. 8. 6	59. 34. 58	61. 1. 48	62. 28. 38	- - -	- - -	- - -
Regulus.	17	- - -	- - -	- - -	- - -	25. 40. 37	27. 9. 3	28. 37. 29	30. 5. 55
	18	31. 34. 20	33. 2. 45	34. 31. 11	35. 59. 39	37. 28. 7	38. 56. 37	40. 25. 9	41. 53. 45
	19	43. 22. 24	44. 51. 7	46. 19. 54	47. 48. 47	49. 17. 45	50. 46. 49	52. 16. 0	53. 45. 18
	20	55. 14. 43	56. 44. 16	58. 13. 57	59. 43. 48	61. 13. 48	62. 43. 58	64. 14. 19	65. 44. 51
	21	67. 15. 35	- - -	- - -	- - -	- - -	- - -	- - -	- - -
Spica ♍.	21	14. 17. 12	15. 44. 20	17. 12. 9	18. 40. 39	20. 9. 46	21. 39. 28	23. 9. 41	24. 40. 23
	22	26. 11. 33	27. 43. 7	29. 15. 2	30. 47. 16	32. 19. 47	- - -	- - -	- - -
The Sun.	28	- - -	- - -	- - -	- - -	- - -	- - -	39. 42. 27	41. 19. 15
	29	42. 56. 12	44. 33. 17	46. 10. 29	47. 47. 48	49. 25. 14	51. 2. 45	52. 40. 21	54. 18. 2
	30	55. 55. 47	57. 33. 35	59. 11. 27	60. 49. 22	62. 27. 19	64. 5. 18	65. 43. 19	67. 21. 22
	31	68. 59. 26	70. 37. 31	72. 15. 36	73. 53. 42	75. 31. 49	77. 9. 55	78. 48. 1	80. 26. 6
	J.1	82. 4. 11	- - -	- - -	- - -	- - -	- - -	- - -	- - -

THE SATELLITES OF JUPITER

are not visible this Month,

JUPITER being too near the SUN.

EXPLANATION AND USE

OF THE

ARTICLES

CONTAINED IN

THE ASTRONOMICAL AND NAUTICAL EPHEMERIS.

BY THE LATE DR. MASKELYNE.

It may be proper first to premise, that all the Calculations of the *Ephemeris*, except of the Eclipses of Jupiter's Satellites, are made according to the apparent Time by the Meridian of the *Royal Observatory* at *Greenwich*: and the Sun's, Planets', and Moon's Places, with the Particulars depending on them in the IId, IVth, Vth, VIth, and VIIth Pages of each Month, are computed to the Instant of apparent Noon, or that of the Sun's Centre passing the Meridian of *Greenwich*.

Apparent Time, at any Place, is that deduced immediately from the Sun, whether from the Observation of his passing the Meridian, from his Altitude observed at a Distance from the Meridian, or from his observed Rising or Setting. This Time is different from that shown by Clocks and Watches well regulated at Land, which is called equated or mean Time. This will be explained when we come to treat of the Equation of Time.

The Day is here supposed, according to the method of Astronomers, to begin at Noon, or 12 Hours later than the civil Day of the same denomination, and to be counted up to 24 Hours, or the succeeding Noon, when the next Day begins. Thus the Day of the Month and the Hour of the Day are the same in this Method as in the civil Account at Noon, and from Noon till Midnight; but from Midnight till Noon they differ; for whereas in the civil Account a fresh Day is supposed to begin at Midnight, and the Hours to begin over again, in this Method the Day is still continued beyond Midnight, and the reckoning of the Hours is continued up to 24. Thus the Distances put down to January 10, XV Hours, belong to January 11, at Three in the Morning by civil Reckoning.

There are XII Pages for every Month. The first Column of the first Page of each Month contains the Day of the Week, expressed concisely by the initial Letter or Letters: the second the Day of the Month: the third Column exhibits the Sundays and Festivals of the Church of England, and other remarkable Days: the last Column shows at Top the Moon's Phases, or the Times of New and Full Moon, and of the first and last Quarter or two Quadratures with the Sun: beneath are contained miscellaneous Phenomena, namely, Eclipses of the Sun and Moon, and Occultations of Planets or fixed Stars not less than the fourth Magnitude, by the Moon, as they should happen at *Greenwich* by the Tables; the Conjunctions of the Moon with all Stars not less than the fourth Magnitude, which can be Occultations any where on the Globe, the Entrance of the Sun into the several Signs, and any other remarkable Phenomena.

The Stars are expressed by *Bayer's* Characters of Reference. The Conjunction of the Moon or a Planet with a Star is denoted by prefixing the Character of the Moon or Planet to that of the Star, the Time of the Conjunction being placed immediately before. "The Case is the same with respect to the Occultation of a Star or Planet by the Moon, only this is further distinguished by the Addition of Im. or Immersion, to signify the Disappearance behind the Moon; and Em. or Emersion, to signify the Re-appearance of the same. Thus, $8^d.\ 16^h.\ 22'\ ☽ ♉\ ν^{\beta}$, signifies that the Moon will be in Conjunction with the Star ♉ $ν^{\beta}$ on the Eighth Day at $16^h.\ 22'$, exclusive of Parallax: and $10^d.\ 9^h.\ 14'$ Im. of $ι$ ♊; $10^d.\ 10^h.\ 23'$ Em. signifies that the Moon will eclipse $ι$ ♊ on the 10th Day, the Immersion being at $9^h.\ 14'$, and the Emersion at $10^h.\ 23'$, apparent Time at *Greenwich*."

An Eclipse of the Sun, or Occultation of a fixed Star by the Moon, if observed in a Place whose Latitude and Longitude are well determined, may be applied to the Correction of the Lunar Tables; but if made in a Place whose Latitude only is well known, may be applied to the Determination of the Longitude of the Place; but for this purpose an accurate Calculation must be made of the Moon's Parallaxes in Longitude and Latitude, which makes this Method of settling the Longitudes of Places, though a very accurate one, less convenient in Use for Persons not much versed in astronomical Calculations. However, this ought not to discourage Travellers or Mariners from endeavouring to make these Observations as often and as carefully as possible, when they shall happen to be at any Place whose Longitude they have Reason to think has not been well settled; since the necessary Calculations may be made at any Time afterwards by themselves, at Leisure, or referred to the Skill of Astronomers and Mathematicians.

Eclipses of the Moon are not liable to this Inconvenience; the Longitude of any Place, where the Eclipse has been observed, being deduced immediately by taking the Difference of the Time of the Observation and that set down in the *Ephemeris*, and converting it

into Degrees, at the rate of 15° to One Hour, &c. or more briefly by Table XIV. Page 38, of the Tables requisite to be used with the *Ephemeris*. But as the Beginning or Ending of an Eclipse of the Moon cannot be generally observed nearer than One Minute, and sometimes Two or Three Minutes of Time, the Longitudes of Places cannot be certainly determined by this Method from a single Observation of the Beginning or End nearer than a Degree. Even this Point of Exactness will often be of great Service. If both the Beginning and End of the Eclipse be observed, a greater Degree of Exactness will be attained.

The Conjunctions of the Moon with the Planets, or fixed Stars not less than the fourth Magnitude, which may prove Occultations in some inhabited Parts of the Globe, are evidently designed to instruct Mariners or Travellers to look out frequently for such Observations; which, if they happen to prove Occultations, and are carefully observed, will afford a certain Means of determining the Longitude of the Place of Observation.

The Two first Columns of the second Page of the Month contain the Day of the Week and Month, as before; next follow the Sun's Longitude, right Ascension in Time, Declination, and the Equation of Time with its Difference from Day to Day.

The Longitude of the Sun is made Use of in most of the succeeding Calculations of the *Ephemeris*, and may serve either to verify them, or to make other similar Calculations at a different Time of the Day; particularly it may serve, with the Help of the Moon's Longitude and Latitude, to find the Distance of the Moon from the Sun at any Time, independent of the Distances contained in the VIIIth, IXth, Xth, and XIth Pages of the Month. To find the Sun's Longitude at any Time different from Noon, Proportion must be made according to its daily Increase: saying, as 24^h is to the Hour from Noon reckoned by the meridian of *Greenwich*, so is the daily Variation of the Sun's Longitude, to a fourth Number; which, added to the Sun's Longitude at the preceding Noon, gives the true Longitude at the given Time.

If the Time given be that of a Meridian different from *Greenwich*, it must be first reduced thereto, by adding or subtracting the Difference of Longitude turned into Time (at the Rate of One Hour to 15°, and One Minute of Time to 15 Minutes, or more briefly by Table XIV. Page 38, of the *Requisite Tables*) accordingly as the Place is to the West or to the East of *Greenwich*. Example: Suppose any one should want to know the Sun's Longitude, January 19, 1767, at 4^h. 35′ being in 91°. 15′ Longitude East of *Greenwich*. The Difference of Longitude turned into Time is 1^h. 25′, which subtracted from 4^h. 35′, because the Place is East of *Greenwich*, leaves 3^h. 10′ for the Time reduced to the Meridian of *Greenwich*. The Sun's Longitude the preceding Noon is 9^s. 29°. 18′. 2″, and the following Noon it is 10^s. 0°. 19′. 4″, the Difference is 1°. 1′. 2″, or 61′. 2″, the daily Variation. Then say, as 24^h is to 3^h. 10′, so is 61′. 2″, to 8′. 3″, which, added to 9^s. 29°. 18′. 2″, the Sun's Longitude on the preceding

Noon, gives 9°. 29°. 26′. 5″, the Sun's Longitude at the Time given. In like manner any other of the following Articles is to be found by the Help of the *Ephemeris*.

The Sun's Longitude serves also to compute the Aberration of the fixed Stars and Planets.

The Sun's right Ascension in Time is useful to the practical Astronomer in regular Observatories, who adjusts his Clocks by sidereal Time. It is also useful to him for converting apparent into sidereal Time; as suppose that of an Eclipse of Jupiter's Satellites, in order to know at what Time it may be expected to happen by his Clock: for this Purpose the Sun's right Ascension at the preceding Noon, together with the Increase of right Ascension from Noon, must be added to the apparent Time of the Phenomenon set down in the *Ephemeris*.

The Sun's right Ascension in Time serves also to compute the apparent Time of a known Star passing the Meridian: thus, subtract the Sun's right Ascension in Time at Noon from the Star's right Ascension in Time, the remainder is the apparent Time of the Star's passing the Meridian nearly; from which the proportional Part of the daily Increase of the Sun's right Ascension for this apparent Time from Noon being subtracted, leaves the correct Time of the Star's passing the Meridian.

Hence the apparent Time may be found from an observed Altitude of a known fixed Star, suppose one contained in Page 7, of the *Requisite Tables*; as will be explained hereafter.

The Sun's right Ascension in Time is also useful for computing the Time of the Moon and Planets' passing the Meridian, as will be shown under their proper Articles.

The Sun's Declination is necessary to find the Latitude, whether at Sea or Land, from the Meridian Altitude observed: it is also requisite for finding the Latitude from Two Altitudes observed, with the Interval of Time measured by a watch; it serves for computing the Sun's Azimuth, having his Altitude and the Latitude of the Place given, in order to find the Variation of the Compass; it is required, jointly with the Latitude of the Place and the Sun's horary Angle, to compute his Altitude if neglected to be observed at the time of taking the Moon's Distance from the Sun for finding the Longitude, being useful to facilitate the Calculations of the Effect of Refraction and Parallax upon the Distance; it is also necessary to calculate the apparent Time from an observed Altitude of the Sun at a Distance from the Meridian, the Latitude being given; or to compute the Time of the Sun's Setting or Rising; which, though a less accurate Method than the former of obtaining the Time, may yet be useful when that cannot be had. For any of these purposes the Sun's Declination must be found to the Time, given nearly, reduced to the Meridian of *Greenwich*, making Proportion according to the Daily Increase or Decrease, in like manner as was shown with respect to the Sun's Longitude.

The Equation of Time is a Correction, which added to, or subtracted from the apparent Time (according to its Title at the Top of the Column) gives equated or mean Time, or that which should be shown by a good Clock or Watch. Apparent Time is that which takes its beginning from the Passage of the Sun's Centre over the Meridian of any Place; and had the Sun no motion in the Ecliptic, or were his motion reduced to the Equator or in right Ascension uniform, he would always return to the Meridian after equal Intervals of Time. But his apparent motion in the Ecliptic continually varying, and his Motion in right Ascension being rendered further unequal on account of the Obliquity of the Ecliptic to the Equator, from these Causes, it arises that the Intervals of his Return to the Meridian become unequal, and the Sun will gradually come too slow or too soon to the Meridian for an equal Motion, such as that of Clocks and Watches ought to be.

This Retardation or Acceleration of the Sun's coming to the Meridian is called the Equation of Time, and is contained in the last Column but one of Page II. and when applied according to its Title to the apparent Time, or that deduced immediately from the Sun, gives the mean or equated Time, whence the Error of a Clock or Watch may be found, and, if required, it may be corrected.

If it be proposed to convert mean Time into apparent, this is done by a contrary Process, by applying the Equation of Time to the mean Time given, with its Title or Sign changed; viz. subtracting instead of adding, and adding instead of subtracting.

The Equation of Time being set down in the *Ephemeris* for Noon at *Greenwich*, Proportion must be made according to the daily Difference, to find what it should be at any given Time reduced to the same Meridian, as in the preceding Articles. The last Column of this Page, containing the daily Differences of the Equation, is designed for this Purpose.

As often as it may be required to make any Calculations from astronomical Tables, and the Time given be apparent Time; it is necessary first to apply the Equation of Time thereto to convert it into mean Time, the Tables being disposed according to mean Motions. Thus the Articles contained in the *Ephemeris* answering to Noon were computed to 0^h increased, or 24 Hours of the preceding Day diminished, by the Equation of Time: and the Moon's Places set down for Midnight were computed to 12^h, increased or diminished by the Equation of Time.

What has been shown concerning the Equation of Time chiefly respects the Astronomer, the Mariner having nothing to do with it in computing his Longitude from the Moon's Distances from the Sun and Stars observed at Sea with the Help of the *Ephemeris*, all the Calculations thereof being adapted to apparent Time, the same which he will obtain by the Altitudes of the Sun or Stars in the manner hereafter prescribed.

But when Time-keepers are used at Sea, the apparent Time deduced from an Altitude of the Sun must be corrected by the Equation of Time, and the mean Time found compared with that shown by the Watch; the Difference will be the Longitude in Time from the Meridian by which the Watch was set, as near as the Going of the Watch can be depended upon.

The Equation of Time is computed by taking the Difference of the Sun's true right Ascension and his mean Longitude corrected by the Equation of the Equinoxes in right Ascension, and turning it into Time at the Rate of 1′ to 15′, &c. The Equation of Time will be additive or subtractive, as the Sun's true right Ascension is greater or less than his mean Longitude so corrected.

The Time of the Sun's Semidiameter passing the Meridian, Page III. serves to reduce an Observation of a Transit of the preceding or subsequent Limb over the Meridian to that of the centre, when only One was observed. It signifies a Portion of apparent Time, or even mean Time, the Difference being absolutely insensible upon so small an interval. It is found thus: Increase the Sun's Semidiameter in the ratio of the Co-sine of his Declination to the Radius, to find his Semidiameter in right Ascension, which turned into Time at the Rate of 1′ to 15′, and 1″ to 15″, gives the Time required. The Sun's Semidiameter in right Ascension is readily found by adding the Log. Co-sine of his Declination to the logistic Logarithm of his Semidiameter, the Sum is the logistic Logarithm of his Semidiameter in right Ascension, which divided by 15 gives the Time of his Semidiameter passing the Meridian. If the Clock by which the Observation is made be regulated according to the sidereal Time, this quantity must be increased in the Ratio of 365 to 366, if great precision is required. From the Time of the Sun's Semidiameter passing the Meridian may also be found the Time of its passing the horizontal or vertical Wire of a Quadrant or Sextant, which on some Occasions may have its Use.

The Semidiameter of the Sun is necessary to reduce the observed Altitude of his upper or lower Limb to that of the Centre; also to reduce the observed Distance of the Moon's nearest Limb from the Sun's nearest Limb to the Distance of the Centres. It is also useful to Astronomers to verify or ascertain the exactness of the Scale of their Micrometers, by comparison with the Measure of the Sun's horizontal Diameter. This practice is particularly useful in solar Eclipses, when the Distance of the Cusps or the Versed Sine of the uneclipsed Part has been measured with the Micrometer.

The hourly Motion of the Sun is useful in computing solar and lunar Eclipses; also in correcting the assumed Longitude of the Ship, in order to find the Time from an Observation of the Distance of the Moon from the Sun, independent of the Distances contained in the *Nautical Ephemeris*. See *British Mariner's Guide*, Page 49, and Table at the end of the same, Page 25. The Logarithm of the

Sun's Distance is useful in the Calculation of the Places of the Planets and Comets. The Place of the Moon's Node signifies its mean Longitude, and is necessary for finding the Equation of the equinoctial Points both in Longitude and right Ascension, the Equation of the Obliquity of the Ecliptic, and the Deviations of the fixed Stars in right Ascension and Declination.

The Eclipses of Jupiter's Satellites are set down on the lower part of Page III. and to mean Time. They are well known to afford the readiest, and for general Practice the best Method of settling the Longitudes of Places at Land; and it is by their Means principally that Geography has been so much reformed since the Invention of Telescopes, and the Construction of Tables for calculating the Time of their happening; and the Position of the most distant Places determined with equal Accuracy to the nearest. It was hoped that some Means might be found of using proper Telescopes on Shipboard to observe these Eclipses: and could this be effected, it would be of great Service in ascertaining the Longitude of a Ship from time to time. In my Voyage to *Barbadoes*, under the Directions of the Commissioners of Longitude, in 1763, I made a full trial of the late Mr. *Irwin's* Marine Chair proposed for this purpose, but could not derive any advantage from the Use of it; and, considering the great power requisite in a Telescope for making these Observations well, and the Violence as well as Irregularities of the Motion of a Ship, I am afraid the complete Management of a Telescope on Shipboard will always remain among the Desiderata. However, I would not be understood to mean to discourage any attempt founded upon good Principles to get over this Difficulty.

The Telescopes, proper for observing the Eclipses of Jupiter's Satellites, are reflecting Telescopes of 18 Inches or 2 Feet focal Length, and Telescopes of Mr. *Dollond's* Construction with Two Object Glasses from 5 to 10 Feet; or, which are still more convenient, those of 46 Inches focal Length, 3¾ Inches aperture, constructed with Three Object Glasses, which are as manageable as reflecting Telescopes, and perform as much as those which he makes of 10 Feet with Two Object Glasses.

The Eclipses of Jupiter's Satellites are observed by Astronomers at Land, as well in order to provide Materials for improving the Theories and Tables of their Motions, as for the sake of comparison with the corresponding Observations which may be made by Persons in different Parts of the Globe, whereby the Longitude of such Places will be accurately ascertained. It is indeed to be lamented that Persons, who visit distant Countries, are not more diligent to multiply Observations of this Kind; for want of which, the Observations made by Astronomers in established Observatories lose half their Use, and the Improvement of Geography is retarded. But it is to be hoped that an Emulation will spring up among those who may have Opportunities of rendering so useful a Service to the Public, to incite them to watch diligently for the Occasions of observing these Eclipses carefully, par-

ticularly of the First and Second, which are most exact for the Purpose. The Eclipses, carefully calculated and set down in the *Ephemeris*, will serve to advertise them and Observers in general of the Times when they should attend to these Observations. The Person, who shall be under any Meridian different from *Greenwich*, must turn his Difference of Longitude into Time; (see *Requisite Tables*, Page 38,) and add it to or subtract it from the Time of the Eclipse set down in the *Ephemeris*, according as he is to the East or West of *Greenwich*, to find the mean Time at which the Eclipse will happen at his Meridian nearly. He must further take care to regulate his Watch or Clock by mean Time, or at least to know the Difference, as well in order to apprise him of the Time to look out for the Eclipse, as for ascertaining the apparent Time exactly at which he shall observe it. Equal Altitudes of the Sun or Stars, taken with an Astronomical Quadrant, afford the best Means of regulating Clocks and Watches for occasional Observations; or they may be taken with a *Hadley's* Quadrant, by reflection from a Bason of Water or Quicksilver, or from the horizon of the Sea, if the Observer has an open Prospect, and is not elevated above 5 or 600 Feet above the level of the Sea. But, if Opportunity does not admit of taking equal Altitudes, the Time may be determined from One Altitude taken in any of the Methods above-mentioned, at least Two or Three Points of the Compass distant from the Meridian, but the nearer to the East or West the better, the Latitude of the Place being known, or being found by Observations of the Meridian Altitude of the Sun or Stars made on Purpose. It will be better to take several Altitudes in order to take a mean of the Results for greater Certainty. And if one Star be observed to the East and the other to the West of the Meridian, the Time will be determined with rather more certainty. The manner of computing the apparent Time from the Altitude of the Sun or a Star is shown by Problems VI and VII, Pages 30 and 32, of the Explanation and Use of the *Requisite Tables*.

The Observer, being in a Place whose Longitude is well known, should be settled at his Telescope Three Minutes before the expected Time of an Immersion or Emersion of the Three first Satellites; and Ten Minutes before that of the fourth Satellite; but if the Longitude of the Place is very uncertain, he must begin to look out for the Eclipse proportionably sooner: thus, if the Longitude of the Place is uncertain to 3 Degrees, answering to 12 Minutes of Time, he ought to fix himself to his Telescope 12 Minutes sooner than is mentioned above. Nevertheless, when he has observed one Eclipse of any Satellite, and thereby found the Error of the Tables, he may allow the same Correction to the Calculations of the *Ephemeris* for several Months, which will advertise him very nearly of the Time of expecting the Eclipses of the same Satellite, and dispense with his attending so long.

The Immersions signify the Instant of the Disappearance of the Satellite by entering into the Shadow of Jupiter; and the Emersions signify the first Instant of its Appearance at coming out of the same.

They generally happen when the Satellite is at some Distance from the Body of Jupiter, except near the Opposition of Jupiter to the Sun, when the Satellite approaches nearer to his Body. Before the Opposition of Jupiter to the Sun, the Immersions and Emersions happen on the West Side of Jupiter, and after the Opposition on the East Side; but if an Astronomical Telescope be used, which reverses Objects, the Appearance will be directly the contrary. Before the Opposition, the Immersions only of the first Satellite are visible; and after the Opposition, the Emersions only. The same is generally the Case with respect to the second Satellite; but both the Phenomena of the same Eclipse are frequently observable in the Two outer Satellites. The Immersions and Emersions, marked with an Asterisc in the *Ephemeris*, are those visible at *Greenwich*.

To know if an Eclipse will be visible in any Place, find whether Jupiter be 8° above the Horizon of the Place, and the Sun as much below it. This may be done near enough by a celestial Globe: otherwise, the Time of the Sun's Rising and Setting may be found for any Latitude, by a Table of semidiurnal Arcs contained in the popular Book, called *The Mariner's Compass Rectified*, and many other Books; the Time of Jupiter's Rising and Setting may also be found from the Time of his passing the Meridian and Declination set down in the *Ephemeris*, with the Help of the same Table of semidiurnal Arcs; adding or subtracting the semidiurnal Arc answering to the same Declination of the Sun: remembering always, that if Jupiter's Declination and the Latitude of the Place are of the same Denomination, the semidiurnal Arc will be more than Six Hours, and if they are of contrary Denominations, will be less than Six Hours. But it may be more easily found whether the Eclipse will be visible at *Greenwich*, or whether it should be properly marked with an Asterisc, by the Tables, Page 28—31, annexed to the *Nautical Almanac* of 1772. For this purpose the mean Time, at which the Eclipse is expected to happen, found according to l. 7, p. 192, must be turned into apparent Time, by applying the Equation of Time to it with a contrary Sign.

The Immersion or Emersion of any Satellite being carefully observed in any Place according to mean Time, the Longitude from *Greenwich* is found immediately by taking the Difference of the Observation from the corresponding Time shown in the *Ephemeris*, which must be turned into Degrees, &c. by *Requisite Tables*, Page 38; and will be East or West of *Greenwich*, as the Time observed is more or less than that of the *Ephemeris*.

Example:—Suppose an Emersion of the first Satellite should be observed at the *Cape of Good Hope*, April 16, 1805, at $13^h.\ 25'.\ 35''$, mean Time: the Time by the *Ephemeris* being $12^h.\ 12'.\ 2''$, the Difference is $1^h.\ 13'.\ 33''$, whence the Longitude of the *Cape* should be $18°.\ 23'.\ 15''$, East of *Greenwich*, because the Time supposed to be observed at the *Cape* is more than that of the *Ephemeris*.

"It is to be observed, that a correspondent Observation of an Eclipse of a Satellite of Jupiter, made under a well-known Meridian, is to be preferred to the Calculations of the *Ephemeris* for comparing with an Observation made in a Meridian whose Longitude is required; but if no corresponding Observation can be obtained, as is frequently the Case, it will be best to find what Correction the Calculations of the *Ephemeris* require by the nearest Observations to the given Time that can be obtained; which Correction, applied to the Calculation of the given Eclipse in the *Ephemeris*, renders it almost equivalent to an actual Observation."

The Longitudes and Latitudes of the Planets, Page IV. serve to show where to look for them in the Heavens, to enable Persons less skilled to distinguish them from the fixed Stars. They also show when they are in the most important Points of their Orbits, where it is most material to observe them. Their Declinations and the apparent Times of their passing the Meridian are particularly useful to Astronomers, who are furnished with Quadrants and Transit Instruments well fixed in the Meridian, in setting their Instruments for observing their right Ascensions and Declinations, and also to those who are only furnished with a Telescope fitted with a Micrometer.

The apparent Time of a Planet's passing the Meridian may be computed thus; the Planet's right Ascension being calculated from its Longitude and Latitude, and turned into Time, subtract the Sun's right Ascension at Noon in Time from it, to find the Time of the Planet's passing the Meridian nearly, which call T; take the Difference of the ☉ and Planet's daily Variations in right Ascension in Time, if the Planet is progressive in right Ascension, or the Sum, if it is retrograde, which call X; then say, by the Rule of Proportion:

As $24^h \mp X : T :: X : e$; and $T \pm e$ will be the correct Time of the Planet's passing the Meridian. The upper Signs are to be used both to X and e, if the Planet's progressive Motion in right Ascension be greater than that of the Sun; in any other Case the lower Signs are to be made use of.

But perhaps it may be found more readily by continual Approximation, as follows: Take the proportional Part of the Difference or Sum of the ☉ and Planet's daily Motion in right Ascension, answering to the Time of the Planet's passing the Meridian, found nearly, in Proportion to 24^h; and take a further like proportional Part of this proportional Part; and again of this last, and so on as far as is necessary. The Sum of all these proportional Parts added to the Time of the Planet's passing the Meridian, found nearly, if the Planet's progressive Motion in right Ascension is greater than that of the Sun, otherwise subtracted, gives the apparent Time of the Planet's passing the Meridian.

Example:—Let it be required to find the Time of the Moon's passing the Meridian, July 1, 1767.

The Sun's right Ascension in Time, July 1st, is $6^h.40'.25''$, and

July 2d, is $6^h.\ 44'.\ 33''$ by the *Ephemeris*. Therefore his daily Motion in right Ascension is $4'.\ 8''$. The Moon's right Ascension, July 1st at Noon, by the *Ephemeris*, is $159°.\ 2'$, answering to $10^h.\ 36'.\ 8''$ of Time, and July 2d is $169°.\ 39'$, answering to $11^h.\ 18'.\ 36''$. The Difference is $42'.\ 28''$ of Time, from which $4'.\ 8''$ being subtracted, leaves $38'.\ 20''$. Subtract $6^h.\ 40'.\ 25''$, the Sun's right Ascension July 1st at Noon, from $10^h.\ 36'.\ 8''$ the Moon's right Ascension the same Noon, the remainder $3^h.\ 55'.\ 43''$ is the approximate Time of the Moon's passing the Meridian. The proportional Part of $38'.\ 20''$, answering to this, is $6'.\ 17''$, and the proportional Part of $6'.\ 17''$ is $9''$; therefore $6'.\ 17''$ and $9''$, or $6'.\ 26''$ added to $3^h.\ 55'.\ 43''$ give $4^h.\ 2'.\ 9''$, the apparent Time of the Moon's passing the Meridian. In the *Ephemeris* it is $4^h.\ 2'$. It may also be computed by taking the Difference of the Moon's right Ascension at Noon and Midnight, but then half the Sun's daily variation in right Ascension must be made use of, and Proportion must be made for 12 instead of 24 Hours; and if the Moon passed the Meridian after Midnight, the Sun's right Ascension at Midnight must be used, which is a Mean between his right Ascensions on the preceding and subsequent Noon. For the Planets it will be sufficient to take the first proportional Part only.

The Days of the Oppositions, Quadratures, &c. of the Planets to the Sun, are Times at which they ought to be observed in fixed Observatories, for settling the Elements of their Orbits by a Series of several Years' Observations.

The Vth, VIth, VIIth, VIIIth, IXth, Xth, XIth Pages of each month contain the Moon's Place, and all the Circumstances relating to her Motion and her Distances from the Sun and proper Stars, from which her Distance should be observed for finding the Longitude at Sea. The Longitude, Latitude, and Declination of the Moon, and Time of her passing the Meridian, afford the like Uses with the same Circumstances of the Planetary Motions, and many more besides. For the sake of greater Precision, the Moon's Longitude, Latitude, right Ascension, Declination, Semidiameter, and Horizontal Parallax, with its proportional Logarithm, are computed Twice a Day to Noon and Midnight, and may readily be inferred to any intermediate Time with the greatest Exactness.

Example:—Let it be required to find the Moon's Longitude and Latitude, &c. July 16, 1767, at $16^h.\ 22'.\ 16''$.

First to find the Longitude.

The Moon's Longitude, July 16, at $12^h.$ is $0^s.\ 6°.\ 40'.\ 25''$, and July 17, at Noon, $0^s.\ 13°.\ 47'.\ 48''$, the Difference $7°.\ 7'.\ 23''$ is the Moon's Motion in 12 Hours; say then, by the Rule of Proportion:

As $12^h.$ is to $4^h.\ 22'.\ 16''$ (the excess of $16^h.\ 22'.\ 16''$ above 12^h) so is $7°.\ 7'.\ 23''$ to $2°.\ 35'.\ 41''$; but this must be corrected on account of the Moon's unequal Motion in 12 Hours, by the Table of Equation of second Difference, Page 169. For this Purpose, take out of the *Ephemeris* the Two Longitudes of the Moon next preceding the

given Time, and the Longitudes immediately following it, and set them down in Order one after another, as follows :—

		☽'s Long. by the *Ephemeris*.	1st Diff.	2d Diff.	Mean of 2d Diff.
1767,		s ° ′ ″	° ′ ″	′ ″	′ ″
July 16,	Noon....	11. 29. 29. 34			
			7. 10. 51		
	Midnight.	0. 6. 40. 25		3. 28	
			7. 7. 23		3. 36
17,	Noon....	0. 13. 47. 48		3. 44	
			7. 3. 39		
	Midnight.	0. 20. 51. 27			

Take their Differences 7°. 10′. 51″, 7°. 7′. 23″, 7°. 3′. 39″; take the Differences of these Differences, or the second Differences 3′. 28″, 3′. 44″; and take their Mean, which is 3′. 36″. Now look for the Equation of second Difference, answering to 4ʰ. 22′ after Midnight, found on the Side, and 3′. 36″ at the Top, which will be found = 24″, and which, according to the Remark at the Bottom of the Table, must be added to 2°. 35′. 41″, the first proportional Part, because the Motions in 12 Hours or first Differences are decreasing, the Sum 2°. 36′. 5″ added to 0ˢ. 6°. 40′. 25″, the Moon's Longitude at Midnight, gives 0ˢ. 9°. 16′. 30″, the Moon's true Longitude, and is as correct as the Longitudes from which it is deduced.

N. B. If the first Differences of the Four Longitudes of the Moon taken out first increase and then decrease, or *vice versâ*, first decrease and then increase, take Half the Difference of the Two second Differences for the Mean second Difference, with which take out the Equation of second Difference, and add or subtract it as the First first Difference is greater or less than the Third first Difference.

To find the Moon's Latitude.

Take out of the *Ephemeris* the Two Latitudes preceding and Two following the given Time, and set them down in Order, and take their first and second Differences, and the Mean of the Two second Differences; find the proportional Part of the Middle first Difference answering to the Hours and Minutes, &c. of the given Time after Noon or Midnight; which correct in the following Manner: entering Table of Equation of second Difference, with the Hour from Noon or Midnight on the Side, and the Mean second Difference at Top, take out the corresponding Number of Seconds, which added to or subtracted from the proportional Part found above, according as the Motion in 12 Hours or first Difference is decreasing or increasing; or, more generally, according as First first Difference is greater or less than Third first Difference, gives the proportional Part corrected; which now added to, or subtracted from the Moon's Latitude at the preceding Noon or Midnight, as the Latitude in these 12 Hours is increasing or decreasing, gives the Moon's Latitude correct.

Example:—The Moon's Latitude is required, July 16, 1767, at $16^h. 22'. 16''$.

	☽'s Lat. by the *Ephemeris*.	1st Diff.	2d Diff.	Mean of 2d Diff.
1767,	° ′ ″	′ ″	′ ″	′ ″
July 16, Noon . . .	4. 31. 10 N.			
Midnight	4. 49. 36	18. 26	4. 36	
17, Noon . . .	5. 3. 26	13. 50	4. 44	4. 40
Midnight	5. 12. 32	9. 6		

The Moon's Latitude, July 16, at Midnight, being $4°. 49'. 36''$ N. and the Motion in the next 12 Hours being $13'. 50''$, say by Proportion:

As 12^h is to $4^h. 22'. 16''$, so is $13'. 50''$ to $5'. 2''$: but this must be corrected by adding $32''$, the Equation of second Difference, answering to the Hour $4^h. 22'$, and the Mean second Difference, $4'. 40''$, because the first Differences are decreasing, or rather because the first of them $18'. 26''$, is greater than the last of them $9'. 6''$, therefore the proportional Part corrected is $5'. 2'' + 32'' = 5'. 34''$, which, added to $4°. 49'. 36''$, gives $4°. 55'. 10''$ N. the Moon's Latitude correct.

Remarks on some Circumstances necessary to be attended to, in order to obtain and apply the Correction of Second Differences rightly in computing the Moon's Latitude.

I. If the Moon's Latitude taken out of the *Ephemeris* for Noon and Midnight changes its Denomination from North to South or from South to North, the Sum of the Two Latitudes of contrary Denominations, where the change happens, is to be accounted the first Difference in that Place.

II. If the Three first Differences first increase and then decrease, or *vice versâ*, first decrease and then increase, Half the Difference of the Two second Differences is to be taken for the Mean second Difference.

III. If the Series of Four Latitudes taken out should first increase and then decrease about the Moon's greatest Latitudes, take the Sum of the Two first Differences standing on each Side of the greatest Latitude for the second Difference in that Place; correct the Moon's Latitude at Noon or Midnight by the simple proportional Part first found; and to the Latitude so corrected, add always in this Case the Equation of second Difference answering to the Mean second Difference.

Before I quit this Subject of Interpolation by second Differences, I shall point out another method, by which the same End may be obtained more readily, and with fewer Rules, by those who are well acquainted with algebraic Subtraction and Addition, and the Manner of applying the Signs in those Operations. Subtract each Latitude from the following for the first Differences, to which prefix the Sign —

if the Latitudes decrease, and subtract each first Difference, thus found, from the following one of the same Order for the second Differences. Half the Sum of the Two second Differences, standing on each Side of the Interval to be interpolated, is to be accounted the Mean second Difference; the Equation, corresponding to it by the Table, is to be applied always with the contrary Sign.

These Operations are to be performed, and the Signs to be applied as in algebraic Subtraction and Addition. Note further, if the four given Latitudes change their Denomination, call the second Latitude +, and those of a contrary Denomination —.

The Moon's Declination may be found at any Hour in the same Manner as her Latitude; the Correction arising from second Differences is easily applied, as shown above.

The other Articles of Page VI. and VII. viz. the Moon's "Right Ascension," her Semidiameter, horizontal Parallax, with its proportional Logarithm, and the Distances contained in the Four last Pages of the Month, may be all found correctly by even Proportion, without requiring any Allowance on Account of second Differences. The proportional Part of the Moon's Longitude, &c. for any Hour, may be found very readily by the Help of the Table of proportional Logarithms, Page 39—55, of the *Requisite Tables*.

The Moon's Longitude and Latitude are used in computing the Distance from the Sun and Stars contained in the Four last Pages of the Month, as well as the Appulses to Stars pointed out in Page I. and jointly with her Parallax and Semidiameter, are necessary for computing the Eclipses of the Sun and Moon, and the Occultations of fixed Stars and Planets by the Moon. They also facilitate the Calculation of the Longitude of any Place from an observed Eclipse of the Sun, or Occultation of a Star, or Planet by the Moon: or, if the Meridian be well known, the Parallax and Semidiameter serve to deduce the Moon's true Place in the Heavens from the Observation, which, compared with that given by the *Ephemeris*, shows the Error of the Tables at the Time. The Moon's Semidiameter and Parallax are applied in correcting almost all Observations of the Moon. The proportional Logarithms of the Moon's Parallax serve further to facilitate the Calculations of Parallaxes.

The Moon's right Ascension and Declination are useful to compute her Altitude at any Time, particularly at the Observation of her Distance from the Sun or a Star, supposing it was neglected to be or could not be observed properly; which latter Case may sometimes happen in the Night, though I think but rarely; the utmost Accuracy therein not being required for the Calculations of Refraction and Parallax. See *British Mariner's Guide*, Page 57, and *Requisite Tables*, Page 35. The Moon's Declination, with her Semidiameter and Parallax, serve for finding the Latitude by the Meridian Altitude of her upper and lower Limb observed at Sea. See *British Mariner's Guide*, Page 93, and *Requisite Tables*, Page 16. The Moon's right Ascension and Declination serve also to compute

the Time from her Altitude observed at the Observation of her Distance from a Star; whence the Longitude may be inferred, though no Altitude of the Sun or a Star was taken for regulating the Time. See *British Mariner's Guide*, Page 61, and *Mr. Edwards's* 5th Problem annexed to the *Nautical Almanac* of 1781, Page 10.

The Distances of the Moon from the Sun and fixed Stars, contained in the VIIIth, IXth, Xth, and XIth Pages of the Month, are set down to every Three Hours of apparent Time by the Meridian of *Greenwich*, and are designed to relieve the Mariner from the Necessity of a Calculation, which he might think prolix and troublesome, and to enable him, when compared with the Distance observed carefully at Sea, to infer his Longitude readily and with little Danger of Mistake to a Degree of Exactness that may be thought sufficient for most Nautical Purposes. But useful and valuable as the Practice of this Method may be at present, it is not a Remark unworthy our Notice, that every future Improvement of the Lunar Tables, as well as the Instruments, will bring it nearer and nearer to Perfection.

The Moon's Distances are computed both from the Sun and proper Stars, and generally from One Object on each Side of her, to afford the Mariner a greater Number of Opportunities of Observation, and a Means of attaining a greater Degree of Exactness. The Distances from the Sun are computed between 40° and 120° of Distance. While the Moon is between the Distances of 20° and 40° from the Sun, her Distance is computed only from a Star on the contrary Side that the Sun is. When she is between the Distances of 40° and 90° from the Sun, her Distance is computed both from the Sun and from a Star on the contrary Side to the Sun; when the Moon is above 90° from the Sun her Distance is computed from Two Stars, one on each Side of her; though still her Distance is computed also from the Sun from 90° to 120. Though the Distance of the Moon from the Sun or Star, well observed with a good Instrument, is sufficient to determine the Longitude with the help of the *Ephemeris*, always within [¼ of] "a Degree," and generally much nearer, yet it will conduce to still greater Accuracy, if the Observer takes the Distance of the Moon from Two Stars, or the Sun and a Star, or, when the Moon is between 90° and 120° distant from the Sun, from the Sun and Two Stars, if he can be so lucky as to obtain these several Observations.

The Longitude being computed from the Observations made with each Star respectively, the Mean of the Results is to be taken as probably approaching nearest to the true Longitude. In particular the Moon's Distance should be taken from Two Stars, or the Sun and a Star on each Side of her, as often as Opportunity permits; since the Mean of the Results will probably be at least as exact again as either separately, I mean as far as depends on any Imperfection of the Instruments, and unavoidable small Errors arising in the use of them, Errors of these kinds having a natural Tendency to correct each other; for that small Error which arises from the imperfection of the Lunar Tables will affect the Result from either

Star equally. But the Error of *Mayer's* last Lunar Tables as corrected from a Series of Dr. *Bradley's* Observations of 9 years, by Mr. *Charles Mason* in 1778, and by Mr. *De la Place's* further Corrections, being those used for the *Nautical Almanacs* of 1805, and following Years, probably never exceeding 30″, the Uncertainty hence arising, in the Determination of the Longitude, can scarcely ever exceed 17 Miles of Longitude, and generally will be much less.

The Distances, set down in the *Ephemeris*, afford the Observer a ready means of knowing the Star from which the Moon's Distance is to be observed; for he has nothing to do but to set his Quadrant to the Distance computed roughly from the *Ephemeris*, neglecting the Seconds, at the apparent Time estimated nearly by the Meridian of *Greenwich*, and direct his sight to the East or West of the Moon, according as the Distance at *Greenwich* is found in the VIIIth and IXth, or Xth and XIth Pages of the Month: and having found the Moon upon the little Speculum, let him give a Sweep with the Quadrant to the right and left, and he will find the Star he seeks for, if above the Horizon and the Air be clear, nearly in a Line perpendicular to the Line of the Moon's Horns or longer Axis, or, which is the same Thing, in the Line of the Moon's shorter Axis produced. The Star is always one of the brightest, so that there is little Danger of mistaking another for it, if the preceding Directions are carefully observed. The Time at *Greenwich* is estimated nearly by turning the supposed Longitude from *Greenwich* into Time, by *Requisite Tables*, Page 38, and adding it to or subtracting it from the apparent Time at the Ship, as its Longitude is West or East of *Greenwich*. It will be sufficient if the distance be computed from the *Ephemeris* within 10′, or 20′, for setting the Quadrant. The principal Use of the Distances of the Moon from the Sun and fixed Stars, namely, in determining the Longitude by comparison with the corresponding Distances observed at Sea, is shown in Problem XI. Page 37, of *Requisite Tables*.

The Distances contained in the *Ephemeris* were computed strictly to Noon and Midnight, and thence interpolated for every Three Hours, according to the Method shown for computing the Moon's Latitude, Page 156-157, except that the Correction of second Differences, at the middle of the Interval to be interpolated, was taken $\frac{1}{8}$ of the Mean of the Two second Differences, and at the First and Third Quarter of the Interval was taken $\frac{3}{4}$ of the Correction just found at the Middle of the Interval; instead of consulting the Table, which would however have given the same Result. But, at the first 12 Hours, when the Distances of the Moon from a Star begin, and the last 12 Hours, when the Distances end, there being only One second Difference instead of Two second Differences on each Side to take a Mean of, this Method fails in these Cases, and therefore the following is to be substituted in its stead, being derived from Sir *Isaac Newton's* Solution of the Problem of drawing a Curve through the Extremities of any Number of given Ordinates.

From Four Distances at Noon and Midnight computed strictly, to interpolate Three Distances at the IIId, VIth, and IXth Hour of the first or last Interval.

Subtract each Distance from the following, for the first Difference, and prefix the Sign —, if the Distances decrease. Subtract each first Difference thus found from the following One of the same Order, for the second Difference: and in like manner subtract the First second Difference from the following for the third Difference; applying the Signs as in algebraic Subtraction. Denote the first or last first Difference by b; the first or last second Difference by c, accordingly as the Interpolation to be made is for the first or last 12 Hours; denote also the third Difference by d, and, a being put to signify the Distance at the Beginning of the Interval, the interpolated Distances will be as follows:—

At IIId Hour of first Interval $a + \frac{1}{4}b - \frac{3}{32}c + \frac{7}{128}d$,
At VIth Hour of first Interval $a + \frac{1}{2}b - \frac{1}{8}c + \frac{1}{16}d$,
At IXth Hour of first Interval $a + \frac{3}{4}b - \frac{3}{32}c + \frac{5}{128}d$;
Or,
At IIId Hour of last Interval $a + \frac{1}{4}b - \frac{3}{32}c - \frac{5}{128}d$,
At VIth Hour of last Interval $a + \frac{1}{2}b - \frac{1}{8}c - \frac{1}{16}d$,
At IXth Hour of last Interval $a + \frac{3}{4}b - \frac{3}{32}c - \frac{7}{128}d$.

In adapting these Formulæ to Numbers, great Care must be taken about the right Application of the Signs. Thus if b, c, or d is Negative, apply the Number expressing the Value of that Term of the Formula where it is found with a contrary Sign to that of the Formula.

Let me add in this Place, that if in filling up the first and last Intervals, a new second Difference has been supposed in arithmetical Progression with the Two given ones, in order to take a Mean between it and the first or last second Difference, the Interpolation at the Middle of the Interval or VIth Hour will be had true, the same as if the above Formulæ had been used. But at the Interpolation of the first and third Quarter there will be an Error of $\frac{1}{128}$ third Difference; which will be corrected, by applying $+\frac{1}{128}d$ or third Difference, to Number found at the first Quarter of the Interval, and $-\frac{1}{128}d$ to that found at the third Quarter of the Interval; equally the same whether it be the first or last Interval.

The Configurations of Jupiter's Satellites, Page XIIth and last, exhibit the apparent Positions of the Satellites with respect to each other, and to Jupiter, at such an Hour of the Evening or Night as they are most likely to be observed, and serve to distinguish the Satellites from one another. Jupiter is distinguished by the Mark ○, and the Satellites by Points with Figures annexed, the Figure 1 signifying the first Satellite, 2 the second Satellite, &c. When the

Satellite is approaching towards Jupiter, the Figure is put between Jupiter and the Point; and when the Satellite is receding from Jupiter, the Figure is put on the other Side of the Point. The Satellites are in the superior Parts of their Orbits, or furthest from the Earth, when they are marked to the right hand or West of Jupiter approaching him; or to the left hand or East of Jupiter receding from him; but are in the inferior Parts of their Orbits, or nearest to the Earth, when they are marked to the right hand or West of Jupiter receding from him, or to the left or East of Jupiter approaching him [: the Latitudes are wholly neglected in these Diagrams]. The Cipher ○, sometimes annexed to the Figure of the Satellite towards the Margin, signifies that it is invisible on the Face of Jupiter; and the black Mark ● signifies that it is invisible, being eclipsed in Jupiter's Shadow, or behind Jupiter, eclipsed by his Body.

A Catalogue of the Longitudes and Latitudes of Nine Principal fixed Stars for the beginning of 1820, from the latest Observations. M. Obl. Ecl. 23°. 27′. 46″,5

Names of Stars.	Mean Long. Jan. 1, 1820.	Mean Lat. Jan. 1, 1820.	Ann. incr. of Long.	Ann. var. of Latitude.
	s ° ′ ″	° ′ ″	″	″
α Arietis.	1. 5. 8. 47, 9	9. 57. 33, 6 N.	50, 275	+0, 161
Aldebaran.	2. 7. 16. 27, 5	5. 28. 48, 2 S.	50, 208	−0, 335
Pollux.	3. 20. 43. 57, 4	6. 40. 17, 2 N.	49, 500	+0, 255
Regulus.	4. 27. 19. 41, 3	0. 27. 34, 8 N.	49, 944	+0, 220
Spica ♍.	6. 21. 19. 49, 5	2. 2. 23, 9 S.	50, 083	+0, 171
Antares.	8. 7. 14. 59, 4	4. 32. 40, 9 S.	50, 118	+0, 424
α Aquilæ.	9. 29. 14. 14, 2	29. 18. 35, 5 N.	50, 793	+0, 080
Fomalhaut.	11. 1. 19. 33, 6	21. 6. 45, 3 S.	50, 593	+0, 212
α Pegasi.	11. 20. 58. 46, 7	19. 24. 35, 7 N.	50, 110	+0, 098

Note.—It will be proper to deduct 4″,5 from each of these Longitudes in computing the Lunar Distances by the Tables at present in use.

A TABLE

OF

ATMOSPHERICAL REFRACTIONS

WITH CORRECTIONS

FOR THE HEIGHT OF

THE BAROMETER AND THERMOMETER,

A TABLE

OF

SECOND DIFFERENCES,

AND

THE TRUE PLACES

OF

SIXTY PRINCIPAL STARS,

FOR 1829.

TABLE OF REFRACTIONS.

App. Altitude.	Refr. B. 30 Th. 50°	Diff. for 1′ Alt.	Diff. for +1 B.	Diff. for −1° Fa.	App. Altitude.	Refr. B. 30 Th. 50°	Diff. for 1′ Alt.	Diff. for +1 B.	Diff. for −1° Fa.
D. M.	M. S.	S.	S.	S.	D. M.	M. S.	S.	S.	S.
0. 0	33.51	11,7	74	8,1	4. 0	11.52	2,2	24,1	1,70
5	32.53	11,3	71	7,6	10	11.30	2,1	23,4	1,64
10	31.58	10,9	69	7,3	20	11.10	2,0	22,7	1,58
15	31. 5	10,5	67	7,0	30	10.50	1,9	22,0	1,53
20	30.13	10,1	65	6,7	40	10.32	1,8	21,3	1,48
25	29.24	9,7	63	6,4	50	10.15	1,7	20,7	1,43
30	28.37	9,4	61	6,1	5. 0	9.58	1,6	20,1	1,38
35	27.51	9,0	59	5,9	10	9.42	1,5	19,6	1,34
40	27. 6	8,7	58	5,6	20	9.27	1,5	19,1	1,30
45	26.24	8,4	56	5,4	30	9.11	1,4	18,6	1,26
50	25.43	8,0	55	5,1	40	8.58	1,3	18,1	1,22
55	25. 3	7,7	53	4,9	50	8.45	1,3	17,6	1,19
1. 0	24.25	7,4	52	4,7	6. 0	8.32	1,2	17,2	1,15
5	23.48	7,1	50	4,6	10	8.20	1,2	16,8	1,11
10	23.13	6,9	49	4,5	20	8. 9	1,1	16,4	1,09
15	22.40	6,6	48	4,4	30	7.58	1,1	16,0	1,06
20	22. 8	6,3	46	4,2	40	7.47	1,0	15,7	1,03
25	21.37	6,1	45	4,0	50	7.37	1,0	15,3	1,00
30	21. 7	5,9	44	3,9	7. 0	7.27	1,0	15,0	,98
35	20.38	5,7	43	3,8	10	7.17	,9	14,6	,95
40	20.10	5,5	42	3,6	20	7. 8	,9	14,3	,93
45	19.43	5,3	40	3,5	30	6.59	,8	14,1	,91
50	19.17	5,1	39	3,4	40	6.51	,8	13,8	,89
55	18.52	4,9	39	3,3	50	6.43	,8	13,5	,87
2. 0	18.29	4,8	38	3,2	8. 0	6.35	,7	13,3	,85
5	18. 5	4,6	37	3,1	10	6.28	,7	13,1	,83
10	17.43	4,4	36	3,0	20	6.21	,7	12,8	,82
15	17.21	4,3	36	2,9	30	6.14	,7	12,6	,80
20	17. 0	4,1	35	2,8	40	6. 7	,7	12,3	,79
25	16.40	4,0	34	2,8	50	6. 0	,6	12,1	,77
30	16.21	3,9	33	2,7	9. 0	5.54	,6	11,9	,76
35	16. 2	3,7	33	2,7	10	5.47	,6	11,7	,74
40	15.43	3,6	32	2,6	20	5.41	,6	11,5	,73
45	15.25	3,5	32	2,5	30	5.36	,6	11,3	,71
50	15. 8	3,4	31	2,4	40	5.30	,5	11,1	,71
55	14.51	3,3	30	2,3	50	5.25	,5	11,0	,70
3. 0	14.35	3,2	30	2,3	10. 0	5.20	,5	10,8	,69
5	14.19	3,1	29	2,2	10	5.15	,5	10,6	,67
10	14. 4	3,0	29	2,2	20	5.10	,5	10,4	,65
15	13.50	2,9	28	2,1	30	5. 5	,5	10,2	,64
20	13.35	2,8	28	2,1	40	5. 0	,5	10,1	,63
25	13.21	2,7	27	2,0	50	4.56	,4	9,9	,62
30	13. 7	2,7	27	2,0	11. 0	4.51	,4	9,8	,60
35	12.53	2,6	26	2,0	10	4.47	,4	9,6	,59
40	12.41	2,5	26	1,9	20	4.43	,4	9,5	,58
45	12.28	2,4	25	1,9	30	4.39	,4	9,4	,57
50	12.16	2,4	25	1,9	40	4.35	,4	9,2	,56
55	12. 3	2,3	25	1,8	50	4.31	,4	9,1	,55

TABLE OF REFRACTIONS.

App. Altitude.	Refr. B. 30 Th. 50°	Diff. for 1′ Alt.	Diff. for +1 B.	Diff. for −1° Fa.	App. Altitude.	Refr. B. 30 Th. 50°	Diff. for 1′ Alt.	Diff. for +1 B.	Diff. for −1° Fa.
D. M.	M. S.	S.	S.	S.	D.	M. S.	S.	S.	S.
12. 0	4. 28, 1	,38	9,00	,556	42	1. 4, 6	,038	2, 16	,130
10	4. 24, 4	,37	8, 86	,548	43	1. 2, 4	,036	2, 09	,125
20	4. 20, 8	,36	8, 74	,541	44	1. 0, 3	,034	2, 02	,120
30	4. 17, 2	,35	8, 63	,533	45	58, 1	,034	1, 94	,117
40	4. 13, 9	,33	8, 51	,524	46	56, 1	,033	1, 88	,112
50	4. 10, 7	,32	8, 41	,517	47	54, 2	,032	1, 81	,108
					48	52, 3	,031	1, 75	,104
13. 0	4. 7, 5	,31	8, 30	,509	49	50, 5	,030	1, 69	,101
10	4. 4, 4	,31	8, 20	,503					
20	4. 1, 4	,30	8, 10	,496	50	48, 8	,029	1, 63	,097
30	3. 58, 4	,30	8, 00	,490	51	47, 1	,028	1, 58	,094
40	3. 55, 5	,29	7, 89	,482	52	45, 4	,027	1, 52	,090
50	3. 52, 6	,29	7, 79	,476	53	43, 8	,026	1, 47	,088
					54	42, 2	,026	1, 41	,085
14. 0	3. 49, 9	,28	7, 70	,469					
10	3. 47, 1	,28	7, 61	,464	55	40, 8	,025	1, 36	,082
20	3. 44, 4	,27	7, 52	,458	56	39, 3	,025	1, 31	,079
30	3. 41, 8	,26	7, 43	,453	57	37, 8	,025	1, 26	,076
40	3. 39, 2	,26	7, 34	,448	58	36, 4	,024	1, 22	,073
50	3. 36, 7	,25	7, 26	,444	59	35, 0	,024	1, 17	,070
15. 0	3. 34, 3	,24	7, 18	,439	60	33, 6	,023	1, 12	,067
30	3. 27, 3	,22	6, 95	,424	61	32, 3	,022	1, 08	,065
16. 0	3. 20, 6	,21	6, 73	,411	62	31, 0	,022	1, 04	,062
30	3. 14, 4	,20	6, 51	,399	63	29, 7	,021	,99	,060
17. 0	3. 8, 5	,19	6, 31	,386	64	28, 4	,021	,95	,057
30	3. 2, 9	,18	6, 12	,374	65	27, 2	,020	,91	,055
18. 0	2. 57, 6	,17	5, 98	,362	66	25, 9	,020	,87	,052
19. 0	2. 47, 7	,16	5, 61	,340	67	24, 7	,020	,83	,050
					68	23, 5	,020	,79	,047
20	2. 38, 7	,15	5, 31	,322	69	22, 4	,020	,75	,045
21	2. 30, 5	,13	5, 04	,305					
22	2. 23, 2	,12	4, 79	,290	70	21, 2	,020	,71	,043
23	2. 16, 5	,11	4, 57	,276	71	19, 9	,020	,67	,040
24	2. 10, 1	,10	4, 35	,264	72	18, 8	,019	,63	,038
25	2. 4, 2	,09	4, 16	,252	73	17, 7	,018	,59	,036
26	1. 58, 8	,09	3, 97	,241	74	16, 6	,018	,56	,033
27	1. 53, 8	,08	3, 81	,230	75	15, 5	,018	,52	,031
28	1. 49, 1	,08	3, 65	,219	76	14, 4	,018	,48	,029
29	1. 44, 7	,07	3, 50	,209	77	13, 4	,017	,45	,027
					78	12, 3	,017	,41	,025
30	1. 40, 5	,07	3, 36	,201	79	11, 2	,017	,38	,023
31	1. 36, 6	,06	3, 23	,193					
32	1. 33, 0	,06	3, 11	,186	80	10, 2	,017	,34	,021
33	1. 29, 5	,06	2, 99	,179	81	9, 2	,017	,31	,018
34	1. 26, 1	,05	2, 88	,173	82	8, 2	,017	,27	,016
35	1. 23, 0	,05	2, 78	,167	83	7, 1	,017	,24	,014
36	1. 20, 0	,05	2, 68	,161	84	6, 1	,017	,20	,012
37	1. 17, 1	,05	2, 58	,155	85	5, 1	,017	,17	,010
38	1. 14, 4	,05	2, 49	,149	86	4, 1	,017	,14	,008
39	1. 11, 8	,04	2, 40	,144	87	3, 1	,017	,10	,006
					88	2, 0	,017	,07	,004
40	1. 9, 3	,04	2, 32	,139	89	1, 0	,017	,03	,002
41	1. 6, 9	,04	2, 24	,134					

Explanation of the Table of Refractions.

THIS Table is computed upon principles explained by Dr. YOUNG in the Philosophical Transactions for 1819; and it appears to agree more perfectly with the latest observations than any other table before published. The formula employed is

$$.0002825 = v\frac{r}{s} + (2.47 + .5\,v^2)\frac{r^2}{s^2} + 3600\,v\frac{r^3}{s^3} + 3600\,(1.235 + .25\,v^2)\frac{r^4}{s^4};$$ r being the refraction, v the sine of the altitude, and s the cosine.

The apparent altitude being found in the first column, the second shows the refraction when the barometer stands at 30 inches, which is its mean height on the level of the sea, and the thermometer at 50° of Fahrenheit. The third column contains the difference to be subtracted or added for every minute of altitude, reckoned from the nearest number in the first column. The fourth shows the number of seconds to be added for every inch that the height of the barometer exceeds 30, or to be subtracted for each inch that it wants of 30: and the last contains the number of seconds to be subtracted for each degree that the thermometer stands above 50°, or to be added for each degree that its height wants of 50°.

If great accuracy be required, we must also deduct from the observed height of the barometer .003 i. for each degree that the thermometer near it is above 50°, and add an equal quantity for an equal depression. In fact, however, the table, as it now stands, is found to require the temperature to be estimated from the height of the thermometer within; and if we employed the height of the thermometer without, which would be more consistent with the theory, it would probably be necessary to suppose the standard temperature of the table 48° only, [or rather 47°,] instead of 50°.

EXAMPLES.

1. At 7°. 18′. 13″ Bar. 29.87 Ther. 66°, the Refr. is 6′. 52″,26, from 22 obs. of Bradley.
2. At 19°. 18′. 19″ Bar. 30.045 Ther. 34°, the Refr. is 2′. 51″, 5, from 3 obs. of Bradley.
3. At 13°. 43′. Bar. 29.85 Ther. 45°, the Refr. is 3′. 55″,85, from 156 obs. of Mr. Pond.

1. Alt. 7°. 20′	R. 7′. 8″	Diff. Alt. ″,9	B. 14″,3	Th. ″,93
	+ 1,62	1′. 47″ = 1′. 8	− .13	−16
	7. 9,62	+ 1,62	1,86	14,88
	16,74			1,86
	6. 52,88			16,74
	6. 52,26			
Error.....	0,62			
2. Alt. 19°	R. 2′. 47″,7	Diff. Alt. ″,16	B. 5″,61	Th. ″,34
	− 2, 93	18′. 19″ = 18. 3	+ .045	+ 16
	2. 44, 77	− 2,93	,252	5,44
	, 25			
	5, 44			
Error 1″,0	2. 50, 46			
3 Alt. 13°. 40′	R. 3′. 55″,5	Diff. Alt. ″,29	B. 7″,89	Th. ″,482
	+ ,36	3	.15	5
	3. 55, 86	−,87	−1,18	+2,41
	3. 55, 85		,87	2,05
Error.....	, 01		2,05	+ ,36

TABLE OF THE

EQUATION OF SECOND DIFFERENCES.

Hours after Noon or Midnight.		Second differences taken for intervals of 12 hours.											
		0 Minute					1 Minute						
		10″	20″	30″	40″	50″	0″	10″	20″	30″	40″	50″
H.M.	H.M.	″	″	″	″	″	″	″	″	″	″	″
0. 0	12. 0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
0.10	11.50	0,1	0,1	0,2	0,3	0,3	0,4	0,5	0,5	0,6	0,7	0,8
0.20	11.40	0,1	0,3	0,4	0,5	0,7	0,8	0,9	1,1	1,2	1,4	1,5
0.30	11.30	0,2	0,4	0,6	0,8	1,0	1,2	1,4	1,6	1,8	2,0	2,2
0.40	11.20	0,3	0,5	0,8	1,0	1,3	1,6	1,8	2,1	2,4	2,6	2,9
0.50	11.10	0,3	0,6	1,0	1,3	1,6	1,9	2,3	2,6	2,9	3,2	3,6
1. 0	11. 0	0,4	0,8	1,1	1,5	1,9	2,3	2,7	3,1	3,4	3,8	4,2
1.10	10.50	0,4	0,9	1,3	1,8	2,2	2,6	3,1	3,5	3,9	4,4	4,8
1.20	10.40	0,5	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,4	4,9	5,4
1.30	10.30	0,5	1,1	1,6	2,2	2,7	3,3	3,8	4,4	4,9	5,5	6,0
1.40	10.20	0,6	1,2	1,8	2,4	3,0	3,6	4,2	4,8	5,4	6,0	6,6
1.50	10.10	0,6	1,3	1,9	2,6	3,2	3,9	4,5	5,2	5,8	6,5	7,1
2. 0	10. 0	0,7	1,4	2,1	2,8	3,5	4,2	4,9	5,6	6,3	6,9	7,6
2.10	9.50	0,7	1,5	2,2	3,0	3,7	4,4	5,2	5,9	6,7	7,4	8,1
2.20	9.40	0,8	1,6	2,3	3,1	3,9	4,7	5,5	6,3	7,0	7,8	8,6
2.30	9.30	0,8	1,6	2,5	3,3	4,1	4,9	5,8	6,6	7,4	8,2	9,1
2.40	9.20	0,9	1,7	2,6	3,5	4,3	5,2	6,0	6,9	7,8	8,6	9,5
2.50	9.10	0,9	1,8	2,7	3,6	4,5	5,4	6,3	7,2	8,1	9,0	9,9
3. 0	9. 0	0,9	1,9	2,8	3,8	4,7	5,6	6,6	7,5	8,4	9,4	10,3
3.10	8.50	1,0	1,9	2,9	3,9	4,9	5,8	6,8	7,8	8,7	9,7	10,7
3.20	8.40	1,0	2,0	3,0	4,0	5,0	6,0	7,0	8,0	9,0	10,0	11,0
3.30	8.30	1,0	2,1	3,1	4,1	5,2	6,2	7,2	8,3	9,3	10,3	11,4
3.40	8.20	1,1	2,1	3,2	4,2	5,3	6,4	7,4	8,5	9,5	10,6	11,7
3.50	8.10	1,1	2,2	3,3	4,3	5,4	6,5	7,6	8,7	9,8	10,9	12,0
4. 0	8. 0	1,1	2,2	3,3	4,4	5,6	6,7	7,8	8,9	10,0	11,1	12,2
4.10	7.50	1,1	2,3	3,4	4,5	5,7	6,8	7,9	9,1	10,2	11,3	12,5
4.20	7.40	1,2	2,3	3,5	4,6	5,8	6,9	8,1	9,2	10,4	11,5	12,7
4.30	7.30	1,2	2,3	3,5	4,7	5,9	7,0	8,2	9,4	10,5	11,7	12,9
4.40	7.20	1,2	2,4	3,6	4,8	5,9	7,1	8,3	9,5	10,7	11,9	13,1
4.50	7.10	1,2	2,4	3,6	4,8	6,0	7,2	8,4	9,6	10,8	12,0	13,2
5. 0	7. 0	1,2	2,4	3,6	4,9	6,1	7,3	8,5	9,7	10,9	12,2	13,4
5.10	6.50	1,2	2,5	3,7	4,9	6,1	7,4	8,6	9,8	11,0	12,3	13,5
5.20	6.40	1,2	2,5	3,7	4,9	6,2	7,4	8,6	9,9	11,1	12,3	13,6
5.30	6.30	1,2	2,5	3,7	5,0	6,2	7,4	8,7	9,9	11,2	12,4	13,7
5.40	6.20	1,2	2,5	3,7	5,0	6,2	7,5	8,7	10,0	11,2	12,5	13,7
5.50	6.10	1,2	2,5	3,7	5,0	6,2	7,5	8,7	10,0	11,2	12,5	13,7
6. 0	6. 0	1,3	2,5	3,8	5,0	6,3	7,5	8,8	10,0	11,3	12,5	13,8

When the second differences are positive, the correction is negative, and the reverse.

TABLE OF THE

EQUATION OF SECOND DIFFERENCES.

Hours after Noon or Midnight.		Second differences taken for intervals of 12 hours.											
		2 Minutes						3 Minutes					
		0″	10″	20″	30″	40″	50″	0″	10″	20″	30″	40″	50″
H.M.	H. M.	″	″	″	″	″	″	″	″	″	″	″	″
0. 0	12. 0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
0. 10	11. 50	0,8	0,9	1,0	1,0	1,1	1,2	1,2	1,3	1,4	1,4	1,5	1,6
0. 20	11. 40	1,6	1,8	1,9	2,0	2,2	2,3	2,4	2,6	2,7	2,8	3,0	3,1
0. 30	11. 30	2,4	2,6	2,8	3,0	3,2	3,4	3,6	3,8	4,0	4,2	4,4	4,6
0. 40	11. 20	3,1	3,4	3,7	3,9	4,2	4,5	4,7	5,0	5,2	5,5	5,8	6,0
0. 50	11. 10	3,9	4,2	4,5	4,8	5,2	5,5	5,8	6,1	6,5	6,8	7,1	7,4
1. 0	11. 0	4,6	5,0	5,3	5,7	6,1	6,5	6,9	7,3	7,6	8,0	8,4	8,8
1. 10	10. 50	5,3	5,7	6,1	6,6	7,0	7,5	7,9	8,3	8,8	9,2	9,7	10,1
1. 20	10. 40	5,9	6,4	6,9	7,4	7,9	8,4	8,9	9,4	9,9	10,4	10,9	11,4
1. 30	10. 30	6,6	7,1	7,7	8,2	8,8	9,3	9,8	10,4	10,9	11,5	12,0	12,6
1. 40	10. 20	7,2	7,8	8,4	9,0	9,6	10,2	10,8	11,4	12,0	12,6	13,2	13,8
1. 50	10. 10	7,8	8,4	9,1	9,7	10,4	11,0	11,6	12,3	12,9	13,6	14,2	14,9
2. 0	10. 0	8,3	9,0	9,7	10,4	11,1	11,8	12,5	13,2	13,9	14,6	15,3	16,0
2. 10	9. 50	8,9	9,6	10,4	11,1	11,8	12,6	13,3	14,1	14,8	15,5	16,3	17,0
2. 20	9. 40	9,4	10,2	11,0	11,7	12,5	13,3	14,1	14,9	15,7	16,4	17,2	18,0
2. 30	9. 30	9,9	10,7	11,5	12,4	13,2	14,0	14,8	15,7	16,5	17,3	18,1	19,0
2. 40	9. 20	10,4	11,2	12,1	13,0	13,8	14,7	15,6	16,4	17,3	18,1	19,0	19,9
2. 50	9. 10	10,8	11,7	12,6	13,5	14,4	15,3	16,2	17,1	18,0	18,9	19,8	20,7
3. 0	9. 0	11,3	12,2	13,1	14,1	15,0	15,9	16,9	17,8	18,8	19,7	20,6	21,6
3. 10	8. 50	11,7	12,6	13,6	14,6	15,5	16,5	17,5	18,5	19,4	20,4	21,4	22,3
3. 20	8. 40	12,0	13,0	14,0	15,0	16,0	17,1	18,1	19,1	20,1	21,1	22,1	23,1
3. 30	8. 30	12,4	13,4	14,5	15,5	16,5	17,6	18,6	19,6	20,7	21,7	22,7	23,8
3. 40	8. 20	12,7	13,8	14,9	15,9	17,0	18,0	19,1	20,2	21,2	22,3	23,3	24,4
3. 50	8. 10	13,0	14,1	15,2	16,3	17,4	18,5	19,6	20,7	21,7	22,8	23,9	25,0
4. 0	8. 0	13,3	14,4	15,5	16,7	17,8	18,9	20,0	21,1	22,2	23,3	24,4	25,6
4. 10	7. 50	13,6	14,7	15,9	17,0	18,1	19,3	20,4	21,5	22,7	23,8	24,9	26,1
4. 20	7. 40	13,8	15,0	16,1	17,3	18,5	19,6	20,8	21,9	23,1	24,2	25,4	26,5
4. 30	7. 30	14,1	15,2	16,4	17,6	18,8	19,9	21,1	22,3	23,4	24,6	25,8	27,0
4. 40	7. 20	14,3	15,4	16,6	17,8	19,0	20,2	21,4	22,6	23,8	25,0	26,1	27,3
4. 50	7. 10	14,4	15,6	16,8	18,0	19,2	20,4	21,6	22,9	24,1	25,3	26,5	27,7
5. 0	7. 0	14,6	15,8	17,0	18,2	19,4	20,7	21,9	23,1	24,3	25,5	26,7	28,0
5. 10	6. 50	14,7	15,9	17,2	18,4	19,6	20,8	22,1	23,3	24,5	25,7	27,0	28,2
5. 20	6. 40	14,8	16,0	17,3	18,5	19,8	21,0	22,2	23,5	24,7	25,9	27,2	28,4
5. 30	6. 30	14,9	16,1	17,4	18,6	19,9	21,1	22,3	23,6	24,8	26,1	27,3	28,6
5. 40	6. 20	15,0	16,2	17,4	18,7	19,9	21,2	22,4	23,7	24,9	26,2	27,4	28,7
5. 50	6. 10	15,0	16,2	17,5	18,7	20,0	21,2	22,5	23,7	25,0	26,2	27,5	28,7
6. 0	6. 0	15,0	16,3	17,5	18,8	20,0	21,3	22,5	23,8	25,0	26,3	27,5	28,8

When the second differences are negative, the correction is positive, and the reverse.

TABLE OF THE

EQUATION OF SECOND DIFFERENCES.

Hours after Noon or Midnight.		Second differences taken for intervals of 12 hours.											
		4 Minutes						5 Minutes					
		0″	10″	20″	30″	40″	50″	0″	10″	20″	30″	40″	50″
H.M.	H.M.	″	″	″	″	″	″	″	″	″	″	″	″
0. 0	12. 0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
0. 10	11. 50	1,6	1,7	1,8	1,8	1,9	2,0	2,1	2,1	2,2	2,3	2,3	2,4
0. 20	11. 40	3,2	3,4	3,5	3,6	3,8	3,9	4,1	4,2	4,3	4,5	4,6	4,7
0. 30	11. 30	4,8	5,0	5,2	5,4	5,6	5,8	6,0	6,2	6,4	6,6	6,8	7,0
0. 40	11. 20	6,3	6,6	6,8	7,1	7,3	7,6	7,9	8,1	8,4	8,7	8,9	9,2
0. 50	11. 10	7,8	8,1	8,4	8,7	9,0	9,4	9,7	10,0	10,3	10,7	11,0	11,3
1. 0	11. 0	9,2	9,5	9,9	10,3	10,7	11,1	11,5	11,8	12,2	12,6	13,0	13,4
1. 10	10. 50	10,5	11,0	11,4	11,8	12,3	12,7	13,2	13,6	14,0	14,5	14,9	15,4
1. 20	10. 40	11,9	12,3	12,8	13,3	13,8	14,3	14,8	15,3	15,8	16,3	16,8	17,3
1. 30	10. 30	13,1	13,7	14,2	14,8	15,3	15,9	16,4	17,0	17,5	18,0	18,6	19,1
1. 40	10. 20	14,4	14,9	15,5	16,1	16,7	17,3	17,9	18,5	19,1	19,7	20,3	20,9
1. 50	10. 10	15,5	16,2	16,8	17,5	18,1	18,8	19,4	20,1	20,7	21,4	22,0	22,7
2. 0	10. 0	16,7	17,4	18,1	18,8	19,4	20,1	20,8	21,5	22,2	22,9	23,6	24,3
2. 10	9. 50	17,8	18,5	19,2	20,0	20,7	21,5	22,2	22,9	23,6	24,4	25,2	25,9
2. 20	9. 40	18,8	19,6	20,4	21,1	21,9	22,7	23,5	24,3	25,1	25,8	26,6	27,4
2. 30	9. 30	19,8	20,6	21,4	22,3	23,1	23,9	24,7	25,6	26,4	27,2	28,0	28,9
2. 40	9. 20	20,7	21,6	22,5	23,3	24,2	25,1	25,9	26,8	27,7	28,5	29,4	30,2
2. 50	9. 10	21,6	22,5	23,4	24,3	25,3	26,2	27,1	28,0	28,9	29,8	30,7	31,6
3. 0	9. 0	22,5	23,4	24,4	25,3	26,3	27,2	28,1	29,1	30,0	30,9	31,9	32,8
3. 10	8. 50	23,3	24,3	25,3	26,2	27,2	28,2	29,1	30,1	31,1	32,1	33,0	34,0
3. 20	8. 40	24,1	25,1	26,1	27,1	28,1	29,1	30,1	31,1	32,1	33,1	34,1	35,1
3. 30	8. 30	24,8	25,8	26,9	27,9	28,9	30,0	31,0	32,0	33,1	34,1	35,1	36,2
3. 40	8. 20	25,5	26,5	27,6	28,6	29,7	30,8	31,8	32,9	34,0	35,0	36,1	37,1
3. 50	8. 10	26,1	27,2	28,3	29,3	30,4	31,5	32,6	33,7	34,8	35,9	37,0	38,0
4. 0	8. 0	26,7	27,8	28,9	30,0	31,1	32,2	33,3	34,4	35,6	36,7	37,8	38,9
4. 10	7. 50	27,2	28,3	29,5	30,6	31,7	32,9	34,0	35,1	36,3	37,4	38,5	39,7
4. 20	7. 40	27,7	28,8	30,0	31,1	32,3	33,5	34,6	35,8	36,9	38,1	39,2	40,4
4. 30	7. 30	28,1	29,3	30,5	31,6	32,8	34,0	35,2	36,3	37,5	38,7	39,8	41,0
4. 40	7. 20	28,5	29,7	30,9	32,1	33,3	34,5	35,6	36,8	38,0	39,2	40,4	41,6
4. 50	7. 10	28,9	30,1	31,3	32,5	33,7	34,9	36,1	37,3	38,5	39,7	40,9	42,1
5. 0	7. 0	29,2	30,4	31,6	32,8	34,0	35,2	36,5	37,7	38,9	40,1	41,3	42,5
5. 10	6. 50	29,4	30,6	31,9	33,1	34,3	35,6	36,8	38,0	39,2	40,5	41,7	42,9
5. 20	6. 40	29,6	30,9	32,1	33,3	34,6	35,8	37,0	38,3	39,5	40,7	42,0	43,2
5. 30	6. 30	29,8	31,0	32,3	33,5	34,8	36,0	37,2	38,5	39,7	41,0	42,2	43,4
5. 40	6. 20	29,9	31,2	32,4	33,6	34,9	36,1	37,4	38,6	39,9	41,1	42,4	43,6
5. 50	6. 10	30,0	31,2	32,5	33,7	35,0	36,2	37,5	38,7	40,0	41,2	42,5	43,7
6. 0	6. 0	30,0	31,3	32,5	33,8	35,0	36,3	37,5	38,8	40,0	41,3	42,5	43,8

When the second differences are negative, the correction is positive, and the reverse.

TABLE OF THE

EQUATION OF SECOND DIFFERENCES.

Hours after Noon or Midnight.		Second differences taken for intervals of 12 hours.											
		6 Minutes						M.	M	M	M	M	M
		0″	10″	20″	30″	40″	50″	7	8	9	10	11	12
H.M.	H.M.	″	″	″	″	″	″	″	″	″	″	″	″
0. 0	12. 0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
0. 10	11. 50	2,5	2,5	2,6	2,7	2,7	2,8	2,9	3,3	3,7	4,1	4,5	4,9
0. 20	11. 40	4,9	5,0	5,1	5,3	5,4	5,5	5,7	6,5	7,3	8,1	8,9	9,7
0. 30	11. 30	7,2	7,4	7,6	7,8	8,0	8,2	8,4	9,6	10,8	12,0	13,2	14,4
0. 40	11. 20	9,4	9,7	10,0	10,2	10,5	10,8	11,0	12,6	14,2	15,7	17,3	18,9
0. 50	11. 10	11,6	12,0	12,3	12,6	12,9	13,2	13,6	15,5	17,4	19,4	21,3	23,3
1. 0	11. 0	13,8	14,1	14,5	14,9	15,3	15,7	16,0	18,3	20,6	22,9	25,2	27,5
1. 10	10. 50	15,8	16,2	16,7	17,1	17,6	18,0	18,4	21,1	23,7	26,3	29,0	31,6
1. 20	10. 40	17,8	18,3	18,8	19,3	19,8	20,2	20,7	23,7	26,7	29,6	32,6	35,6
1. 30	10. 30	19,7	20,2	20,8	21,3	21,9	22,4	23,0	26,3	29,5	32,8	36,1	39,4
1. 40	10. 20	21,5	22,1	22,7	23,3	23,9	24,5	25,1	28,7	32,3	35,9	39,5	43,1
1. 50	10. 10	23,3	23,9	24,6	25,2	25,9	26,5	27,2	31,1	34,9	38,8	42,7	46,6
2. 0	10. 0	25,0	25,7	26,4	27,1	27,8	28,5	29,2	33,3	37,5	41,7	45,8	50,0
2. 10	9. 50	26,6	27,4	28,1	28,9	29,6	30,3	31,1	35,5	39,9	44,4	48,8	53,3
2. 20	9. 40	28,2	29,0	29,8	30,5	31,3	32,1	32,9	37,6	42,3	47,0	51,7	56,4
2. 30	9. 30	29,7	30,5	31,3	32,2	33,0	33,8	34,6	39,6	44,5	49,5	54,4	59,4
2. 40	9. 20	31,1	32,0	32,8	33,7	34,6	35,4	36,3	41,5	46,7	51,9	57,0	62,2
2. 50	9. 10	32,5	33,4	34,3	35,2	36,1	37,0	37,9	43,3	48,7	54,1	59,5	64,9
3. 0	9. 0	33,8	34,7	35,6	36,6	37,5	38,4	39,4	45,0	50,6	56,3	61,9	67,5
3. 10	8. 50	35,0	35,9	36,9	37,9	38,9	39,8	40,8	46,6	52,4	58,3	64,1	69,9
3. 20	8. 40	36,1	37,1	38,1	39,1	40,1	41,1	42,1	48,1	54,2	60,2	66,2	72,2
3. 30	8. 30	37,2	38,2	39,3	40,3	41,3	42,4	43,4	49,6	55,8	62,0	68,2	74,4
3. 40	8. 20	38,2	39,3	40,3	41,4	42,4	43,5	44,6	50,9	57,3	63,7	70,0	76,4
3. 50	8. 10	39,1	40,2	41,3	42,4	43,5	44,6	45,7	52,2	58,7	65,2	71,7	78,3
4. 0	8. 0	40,0	41,1	42,2	43,3	44,4	45,6	46,7	53,3	60,0	66,7	73,3	80,0
4. 10	7. 50	40,8	41,9	43,1	44,2	45,3	46,5	47,6	54,4	61,2	68,0	74,8	81,6
4. 20	7. 40	41,5	42,7	43,8	45,0	46,1	47,3	48,4	55,4	62,3	69,2	76,1	83,1
4. 30	7. 30	42,2	43,4	44,5	45,7	46,9	48,0	49,2	56,3	63,3	70,3	77,3	84,4
4. 40	7. 20	42,8	44,0	45,2	46,3	47,5	48,7	49,9	57,0	64,2	71,3	78,4	85,6
4. 50	7. 10	43,3	44,5	45,7	46,9	48,1	49,3	50,5	57,7	64,9	72,2	79,4	86,6
5. 0	7. 0	43,8	45,0	46,2	47,4	48,6	49,8	51,0	58,3	65,6	72,9	80,2	87,5
5. 10	6. 50	44,1	45,4	46,6	47,8	49,0	50,3	51,5	58,8	66,2	73,6	80,9	88,3
5. 20	6. 40	44,4	45,7	46,9	48,1	49,4	50,6	51,9	59,3	66,7	74,1	81,5	88,9
5. 30	6. 30	44,7	45,9	47,2	48,4	49,7	50,9	52,1	59,6	67,0	74,5	81,9	89,4
5. 40	6. 20	44,9	46,1	47,4	48,6	49,8	51,1	52,3	59,8	67,3	74,8	82,2	89,7
5. 50	6. 10	45,0	46,2	47,5	48,7	50,0	51,2	52,5	60,0	67,4	74,9	82,4	89,9
6. 0	6. 0	45,0	46,3	47,5	48,8	50,0	51,3	52,5	60,0	67,5	75,0	82,5	90,0

When the second differences are negative, the correction is positive, and the reverse.

TRUE APPARENT PLACES
OF
SIXTY PRINCIPAL FIXED STARS,
CORRECTED FOR PRECESSION, ABERRATION, AND NUTATION.

1829.	1. γ Pegasi.		2. α Cassiopeæ.	
	A. R. *in Time.*	N. P. D.	A. R. *in Time.*	N. P. D.
	H. M. S.	° ′ ″	H. M. S.	° ′ ″
January..0 N.	0. 4.26,80	75.45.56,5	0.30.52,39	34.23.50,4
10	26,67	57,4	52,12	51,0
20	26,56	58,4	51,84	52,0
30	26,46	45.59,5	51,58	53,5
February 9	26,37	46. 0,6	51,35	55,5
19	26,31	1,7	51,17	23.57,7
March... 1	26,27	2,7	51,02	24. 0,1
11	26,26	3,5	50,92	2,7
21	26,29	4,1	50,89	5,3
31	26,36	4,5	50,93	7,8
April... 10	26,48	4,6	51,04	10,0
20	26,62	4,5	51,20	12,1
30	26,81	3,9	51,45	13,7
May.... 10	27,03	3,2	51,75	14,9
20	27,28	2,1	52,10	15,7
30	27,56	46. 0,7	52,49	16,0
June.... 9	27,85	45.59,1	52,92	15,8
19	28,17	57,2	53,38	15,1
29	28,47	55,3	53,85	13,9
July.... 9	28,78	53,2	54,32	12,3
19	29,06	51,1	54,78	10,4
29	29,33	49,0	55,20	8,0
August.. 8	29,57	47,0	55,59	5,3
18	29,77	45,1	55,93	24. 2,4
28	29,95	43,3	56,24	23.59,3
Septemb. 7	30,07	41,7	56,48	56,2
17	30,16	40,3	56,66	53,0
27	30,22	39,0	56,78	49,9
October 7	30,24	38,0	56,83	46,8
17	30,22	37,4	56,81	43,9
27	30,18	36,9	56,76	41,2
Novemb. 6	30,12	36,6	56,65	38,8
16	30,03	36,5	56,47	36,8
26	29,93	36,7	56,27	35,1
Decemb. 6	29,81	37,0	56,03	34,0
16	29,69	37,6	55,76	33,2
26	29,57	38,3	55,48	32,9
31	29,51	38,7	55,35	33,0
Mean Place, Jan. 0, 1829.	0. 4.26,57	75.46. 1,6	0.30.51,28	34.24. 6,7

TRUE PLACES OF THE PRINCIPAL FIXED STARS.

3. POLARIS.

1829.	A. R. *in Time.*	N. P. D.	1829.	A. R. *in Time.*	N.
	H. M. S.	° ′ ″		H. M. S.	°
January 0 N.	0.59.46,47	1.35.51,5	July.... 4 N.	0.59.45,89	1.3
5	42,67	51,3	9	49,74	
10	38,82	51,1	14	53,57	
15	34,98	51,2	19	0.59.57,36	
20	31,21	51,3	24	1. 0. 1,06	
25	27,50	51,6	29	4,67	
30	23,87	52,1			
February 4	20,35	52,7	August.. 3	8,16	
9	17,03	53,5	8	11,53	
14	13,90	54,4	13	14,74	
19	10,98	55,5	18	17,76	
24	8,33	56,7	23	20,56	
			28	23,21	
March .. 1	5,97	57,9	Septemb. 2	25,63	
6	3,91	35. 59,3	7	27,75	
11	2,18	36. 0,7	12	29,63	
16	59. 0,79	2,2	17	31,26	
21	58. 59,73	3,7	22	32,62	
26	59,04	5,2	27	33,75	
31	58,67	6,8			
April ... 5	58,68	8,4	October 2	34,58	3(
10	59,07	10,0	7	35,09	3[
15	58. 59,80	11,5	12	35,31	
20	59. 0,87	13,0	17	35,23	
25	2,27	14,4	22	34,84	
30	4,00	15,8	27	34,12	
May.... 5	6,04	17,1	Novemb. 1	33,14	
10	8,34	18,2	6	31,79	
15	10,90	19,2	11	30,16	
20	13,73	20,2	16	28,27	
25	16,78	21,1	21	26,10	
30	19,97	21,8	26	23,64	
June.... 4	23,33	22,4	Decemb. 1	20,92	
9	26,89	22,9	6	17,98	
14	30,56	23,2	11	14,82	
19	34,31	23,4	16	11,49	
24	38,13	23,5	21	8,00	
29	42,01	23,4	26	4,36	
			31	0,62	
			Mean Place, Jan. 0, 1829.	0.59.17,58	1.3

TRUE PLACES OF THE PRINCIPAL FIXED STARS.

1829.	4. α Arietis.		5. α Ceti.		6. α Persei.	
	A. R. *in Time.*	N. P. D.	A. R. *in Time.*	N. P. D.	A. R. *in Time.*	N. P. D.
	H. M. S.	° ′ ″	H. M. S.	° ′ ″	H. M. S.	° ′ ″
January 0 N.	1.57.34, 25	67.20.57, 4	2.53.22, 04	86.35.15, 6	3.12.11, 73	40.45.13, 6
10	34, 11	57, 8	21, 95	16, 4	11, 58	12, 7
20	33, 97	58, 4	21, 83	17, 1	11, 41	12, 2
30	33, 83	59, 1	21, 69	17, 8	11, 19	12, 0
February 9	33, 67	20. 59, 9	21, 55	18, 4	10, 93	12, 2
19	33, 53	21. 0, 9	21. 39	18, 8	10, 66	12, 8
March .. 1	33, 40	1, 9	21, 23	19, 1	10, 40	13, 8
11	33, 29	2, 9	21, 09	19, 3	10, 16	15, 1
21	33, 21	3, 8	20, 98	19, 3	9, 95	16, 5
31	33, 16	4, 7	20, 88	19, 1	9, 78	18, 2
April.... 10	33, 16	5, 4	20, 83	18, 8	9, 66	20, 0
20	33, 20	5, 8	20, 81	18, 2	9, 60	21, 8
30	33, 30	6, 1	20, 83	17, 4	9, 60	23, 6
May.... 10	33, 44	6, 2	20, 90	16, 4	9, 65	25, 2
20	33, 61	5, 9	21, 02	15, 2	9, 79	26, 7
30	33, 83	5, 4	21, 18	13, 8	9, 98	28, 0
June.... 9	34, 06	4, 6	21, 38	12, 3	10, 24	28, 9
19	34, 37	3, 5	21, 61	10, 7	10, 55	29, 6
29	34, 67	2, 2	21, 86	9, 0	10, 92	29, 9
July.... 9	34, 99	21. 0, 8	22, 14	7, 3	11, 29	30, 0
19	35, 31	20. 59, 2	22, 42	5, 6	11, 71	29, 6
29	35, 62	57, 5	22, 73	4, 0	12, 13	29, 0
August.. 8	35, 93	55, 7	23, 03	2, 4	12, 56	28, 1
18	36, 22	54, 0	23, 29	1, 1	12, 98	26, 9
28	36, 48	52, 2	23, 56	35. 0, 0	13, 41	25, 5
Septemb. 7	36, 72	50, 6	23, 82	34. 59, 1	13, 80	23, 8
17	36, 93	49, 0	24, 05	58, 4	14, 17	22, 0
27	37, 13	47, 5	24, 26	58, 0	14, 51	20, 0
October 7	37, 25	46, 2	24, 44	57, 8	14, 81	18, 0
17	37, 37	45, 0	24, 59	57, 9	15, 07	15, 9
27	37, 46	44, 1	24, 72	58, 1	15, 29	13, 7
Novemb. 6	37, 52	43, 3	24, 81	58, 6	15, 45	11, 5
16	37, 53	42, 6	24, 88	59, 2	15, 56	9, 4
26	37, 50	42, 2	24, 92	34. 59, 9	15, 63	7, 4
Decemb. 6	37, 44	41, 9	24, 92	35. 0, 7	15, 64	5, 6
16	37, 37	41, 9	24, 89	1, 5	15, 61	4, 0
26	37, 27	42, 0	24, 83	2, 3	15, 51	2, 7
31	37, 22	42, 1	24, 80	2, 8	15, 43	2, 1
Mean Place, Jan. 0, 1829.	1.57.33, 25	67.21. 0, 1	2.53.21, 01	86.35. 9, 8	3.12. 9, 62	40.45.18, 5

TRUE PLACES OF THE PRINCIPAL FIXED STARS.

1829.	7. Aldebaran.		8. Capella.		9. Rigel.	
	A. R. *in Time.*	N. P. D.	A. R. *in Time.*	N. P. D.	A. R. *in Time.*	N. P. D.
	H. M. S.	° ′ ″	H. M. S.	° ′ ″	H. M. S.	° ′ ″
January 0 N.	4.26. 8,68	73.50.37,2	5. 4. 6,56	44.11.14,0	5. 6.20,95	98.24.31,5
10	8,64	37,5	6,53	12,7	20,93	33,1
20	8,53	37,8	6,44	11,6	20,87	34,5
30	8,44	38,1	6,30	10,6	20,78	35,7
February 9	8,30	38,4	6,12	9,9	20,66	36,7
19	8,15	38,7	5,91	9,5	20,49	37,4
March .. 1	7,97	39,1	5,68	9,3	20,31	37,8
11	7,80	39,4	5,44	9,4	20,12	38,0
21	7,63	39,7	5,19	9,9	19,94	37,9
31	7,48	40,0	4,96	10,6	19,76	37,6
April ... 10	7,36	40,1	4,76	11,5	19,60	37,0
20	7,27	40,2	4,59	12,7	19,48	36,2
30	7,21	40,2	4,47	13,9	19,39	35,1
May 10	7,19	40,1	4,41	15,3	19,34	33,8
20	7,23	39,9	4,39	16,6	19,32	32,3
30	7,31	39,5	4,45	18,0	19,36	30,6
June.... 9	7,44	38,9	4,56	19,2	19,44	28,8
19	7,61	38,3	4,73	20,5	19,56	26,9
29	7,82	37,5	4,95	21,5	19,71	25,0
July 9	8,05	36,6	5,22	22,4	19,90	23,1
19	8,31	35,7	5,52	23,0	20,11	21,3
29	8,59	34,7	5,85	23,5	20,34	19,5
August.. 8	8,88	33,7	6,22	23,8	20,60	18,0
18	9,18	32,8	6,61	23,8	20,86	16,7
28	9,46	31,9	7,01	23,7	21,13	15,7
Septemb. 7	9,76	31,2	7,43	23,4	21,41	15,0
17	10,05	30,5	7,83	22,9	21,68	14,6
27	10,33	30,0	8,22	22,2	21,95	14,6
October 7	10,59	29,6	8,61	21,4	22,20	14,9
17	10,84	29,3	8,98	20,4	22,45	15,7
27	11,05	29,2	9,32	19,3	22,68	16,7
Novemb. 6	11,24	29,2	9,63	18,1	22,89	18,0
16	11,41	29,3	9,89	16,7	23,08	19,5
26	11,56	29,4	10,12	15,3	23,24	21,2
Decemb. 6	11,64	29,7	10,28	13,8	23,35	22,9
16	11,69	29,9	10,41	12,4	23,43	24,7
26	11,71	30,2	10,45	10,9	23,48	26,4
31	11,70	30,3	10,43	10,2	23,48	27,3
Mean Place, Jan. 0, 1829.	4.26. 7,16	73.50.30,6	5. 4. 4,29	44.11. 9,7	5. 6.19,49	98.24.19,9

TRUE PLACES OF THE PRINCIPAL FIXED STARS.

1829.	10. β Tauri.		11. γ Orionis.		12. δ Orionis.	
	A. R. *in Time.*	N. P. D.	A. R. *in Time.*	N. P. D.	A. R. *in Time.*	N. P. D.
	H. M. S.	° ′ ″	H. M. S.	° ′ ″	H. M. S.	° ′ ″
January 0 N.	5.15.31,23	61.32.51,0	5.15.59,53	83.48.54,5	5.23.18,11	90.26. 8,4
10	31,23	50,7	59,55	55,4	18,11	9,6
20	31,19	50,3	59,51	56,1	18,07	10,7
30	31,10	50,1	59,43	56,8	18,00	11,7
February 9	30,96	49,9	59,30	57,4	17,87	12,5
19	30,81	49,8	59,16	57,8	17,74	13,1
March .. 1	30,63	49,7	58,98	58,1	17,56	13,5
11	30,44	49,9	58,81	58,3	17,39	13,8
21	30,25	50,1	58,63	58,4	17,21	13,8
31	30,06	50,4	58,46	58,4	17,03	13,6
April ... 10	29,89	50,8	58,30	58,2	16,87	13,3
20	29,76	51,3	58,18	57,9	16,72	12,8
30	29,66	51,8	58,08	57,4	16,64	12,1
May 10	29,61	52,3	58,03	56,8	16,58	11,2
20	29,59	52,7	58,01	56,1	16,55	10,1
30	29,63	53,1	58,05	55,2	16,57	8,9
June.... 9	29,71	53,5	58,11	54,3	16,63	7,6
19	29,85	53,7	58,22	53,2	16,72	6,2
29	30,03	53,8	58,37	52,1	16,86	4,8
July 9	30,24	53,8	58,56	50,9	17,03	3,2
19	30,49	53,7	58,77	49,7	17,22	1,8
29	30,76	53,5	59,01	48,5	17,46	26. 0,4
August.. 8	31,04	53,3	59,26	47,5	17,70	25.59,1
18	31,35	53,0	59,54	46,6	17,96	58,0
28	31,67	52,6	15.59,81	45,8	18,25	57,1
Septemb. 7	32,00	52,2	16. 0,09	45,2	18,55	56,4
17	32,33	51,8	0,40	44,8	18,83	56,2
27	32,65	51,5	0,70	44,6	19,11	56,0
October 7	32,96	51,1	0,96	44,8	19,39	56,3
17	33,26	50,7	1,23	45,1	19,65	56,8
27	33,54	50,3	1,48	45,7	19,90	57,6
Novemb. 6	33,80	50,0	1,70	46,4	20,13	58,5
16	34,03	49,6	1,90	47,2	20,33	25.59,6
26	34,23	49,2	2,07	48,1	20,50	26. 0,9
Decemb. 6	34,37	48,8	2,21	49,0	20,64	2,3
16	34,48	48,4	2,32	50,0	20,75	3,7
26	34,55	48,0	2,38	50,9	20,81	5,0
31	34,57	47,8	2,39	51,4	20,83	5,7
Mean Place, Jan. 0, 1829.	5.15.29,44	61.32.43,9	5.15.58,01	83.48.44,6	5.23.16,60	90.25.57,6

TRUE PLACES OF THE PRINCIPAL FIXED STARS.

1829.	13. ε Orionis.		14. ζ Orionis.		15. α Orionis.	
	A. R. *in Time.*	N. P. D.	A. R. *in Time.*	N. P. D.	A. R. *in Time.*	N. P. D.
	H. M. S.	° ′ ″	H. M. S.	° ′ ″	H. M. S.	° ′ ″
January 0 N.	5.27.34,07	91.19.16,5	5.32. 9,68	92. 2.34,0	5.45.56,74	82.38. 6,7
10	34,08	17,8	9,69	35,4	56,77	7,5
20	34,04	18,9	9,66	36,6	56,75	8,3
30	33,96	19,9	9,58	37,7	56,69	8,9
February 9	33,84	20,7	9,47	38,5	56,58	9,5
19	33,71	21,4	9,33	39,2	56,45	9,9
March .. 1	33,54	21,9	9,16	39,7	56,29	10,2
11	33,35	22,1	8,98	39,9	56,12	10,4
21	33,17	22,2	8,80	39,9	55,94	10,4
31	32,99	22,0	8,62	39,8	55,77	10,4
April ... 10	32,83	21,7	8,45	39,4	55,61	10,2
20	32,69	21,2	8,31	38,9	55,47	9,9
30	32,59	20,4	8,20	38,1	55,38	9,5
May... 10	32,52	19,5	8,14	37,2	55,29	9,0
20	32,49	18,4	8,11	36,1	55,25	8,4
30	32,50	17,2	8,11	34,8	55,26	7,7
June.... 9	32,56	15,8	8,16	33,4	55,30	6,8
19	32,65	14,3	8,24	32,0	55,40	5,9
29	32,79	12,9	8,37	30,5	55,53	4,9
July.... 9	32,95	11,4	8,54	28,9	55,69	3,9
19	33,14	9,9	8,72	27,5	55,88	2,9
29	33,37	8,5	8,95	26,0	56,10	1,9
August.. 8	33,60	7,2	9,18	24,7	56,34	1,0
18	33,86	6,0	9,44	23,5	56,60	38. 0,1
28	34,15	5,2	9,71	22,6	56,86	37.59,5
Septemb. 7	34,45	4,5	9,99	22,0	57,14	59,0
17	34,75	4,1	10,26	21,6	57,42	58,7
27	35,02	4,0	10,55	21,5	57,71	58,6
October 7	35,30	4,3	10,82	21,8	57,99	58,8
17	35,57	4,8	11,09	22,3	58,26	59,1
27	35,82	5,6	11,34	23,1	58,52	37.59,7
Novemb. 6	36.05	6,6	11,57	24,2	58,77	38. 0,4
16	36,25	7,8	11,79	25,4	59,00	1,2
26	36,43	9,2	11,97	26,8	59,20	2,2
Decemb. 6	36,57	10,6	12,12	28,3	59,35	3,2
16	36,68	12,0	12,24	29,8	59,48	4,1
26	36,75	13,4	12,31	31,3	59,57	5,1
31	36,76	14,1	12,31	32,0	59,60	5,6
Mean Place, Jan. 0, 1829.	5.27.32,55	91.19. 5,6	5.32. 8,15	92. 2.23,0	5.45.55,16	82.37.56,2

TRUE PLACES OF THE PRINCIPAL FIXED STARS.

1829.	16. β Aurigæ.		17. Sirius.		18. Castor.	
	A. R. *in Time.*	N. P. D.	A. R. *in Time.*	N. P. D.	A. R. *in Time.*	N. P. D.
	H.M.S.	° ′ ″	H.M.S.	° ′ ″	H.M.S.	° ′ ″
January 0 N.	5.47. 1,61	45. 4.55,6	6.37.38,33	106.29.26,1	7.23.42,43	57.44.55,0
10	1,66	54,3	38,39	28,5	42,58	54,5
20	1,64	53,0	38,40	30,7	42,66	54,0
30	1,55	51,9	38,36	32,6	42,69	53,3
February 9	1,41	50,9	38,27	34,3	42,66	52,5
19	1,21	50,1	38,15	35,7	42,57	51,7
March.. 1	0,98	49,6	37,99	36,8	42,44	51,0
11	0,73	49,3	37,81	37,5	42,29	50,3
21	0,47	49,3	37,63	37,9	42,11	49,7
31	47. 0,23	49,6	37,42	38,0	41,92	49,2
April... 10	46.59,99	50,2	37,23	37,7	41,73	48,9
20	59,79	51,0	37,05	37,1	41,55	48,7
30	59,64	51,9	36,90	36,3	41,37	48,7
May.... 10	59,53	53,0	36,78	35,1	41,22	48,9
20	59,47	54,3	36,68	33,7	41,10	49,2
30	59,45	55,6	36,64	32,1	41,02	49,6
June.... 9	59,51	56,8	36,62	30,3	40,98	50,1
19	59,62	58,0	36,65	28,4	40,99	50,7
29	46.59,79	4.59,1	36,71	26,4	41,03	51,4
July.... 9	47. 0,00	5. 0,3	36,82	24,3	41,11	52,1
19	0,25	1,3	36,95	22,3	41,25	52,8
29	0,55	2,0	37,11	20,3	41,41	53,6
August.. 8	0,88	2,7	37,31	18,6	41,61	54,3
18	1,24	3,2	37,52	17,0	41,83	55,1
28	1,62	3,5	37,74	15,7	42,08	55,9
Septemb. 7	2,01	3,7	38,01	14,8	42,37	56,7
17	2,40	3,7	38,27	14,3	42,67	57,4
27	2,80	3,6	38,55	14,2	42,99	58,2
October 7	3,19	3,3	38,83	14,5	43,32	58,9
17	3,58	2,8	39,10	15,2	43,66	44.59,6
27	3,95	2,2	39,39	16,4	44,01	45. 0,3
Novemb. 6	4,31	1,4	39,65	17,9	44,35	0,8
16	4,63	5. 0,4	39,91	19,8	44,69	1,3
26	4,91	4.59,3	40,14	21,9	45,01	1,6
Decemb. 6	5,14	58,1	40,33	24,3	45,29	1,7
16	5,32	56,8	40,50	26,7	45,53	1,7
26	5,42	55,5	40,62	29,1	45,73	1,5
31	5,45	54,8	40,67	30,3	45,82	1,3
Mean Place, Jan. 0, 1829.	5.46.59,38	45. 4.48,1	6.37.36,69	106.29.15,0	7.23.40,72	57.44.41,9

TRUE PLACES OF THE PRINCIPAL FIXED STARS.

1829.	19. Procyon.		20. Pollux.		21. α Hydræ.	
	A. R. *in Time.*	N. P. D	A. R. *in Time.*	N. P. D.	A. R. *in Time.*	N. P. D.
	H.M.S.	° ′ ″	H.M.S.	° ′ ″	H.M.S.	° ′ ″
January.. 0 N.	7.30.22,58	84.20.46,9	7.34.52,29	61.34.18,7	9.19.12,54	97.55.22,5
10	22,71	48,1	52,44	18,5	12,75	24,7
20	22,78	49,2	52,53	18,2	12,93	26,7
30	22,81	50,2	52,57	17,7	13,05	28,7
February 9	22,79	50,9	52,55	17,2	13,13	30,4
19	22,70	51,5	52,48	16,5	13,16	31,8
March... 1	22,60	51,9	52,37	15,9	13,14	33,1
11	22,47	52,2	52,23	15,3	13,08	34,1
21	22,33	52,2	52,06	14,7	12,99	34,8
31	22,15	52,2	51,88	14,2	12,87	35,3
April.... 10	21.98	52,0	51,68	13,9	12,73	35,5
20	21,81	51,7	51,51	13,6	12,59	35,6
30	21,66	51,3	51,34	13,5	12,44	35,3
May.... 10	21,53	50,9	51,20	13,5	12,30	34,9
20	21,43	50,3	51,09	13,6	12,17	34,3
30	21,36	49,7	51,00	13,8	12,04	33,5
June.... 9	21,32	49,0	50,95	14,1	11,95	32,6
19	21,32	48,2	50,95	14,5	11,87	31,6
29	21,34	47,5	50,98	15,0	11,81	30,5
July.... 9	21,40	46,7	51,04	15,5	11,78	29,2
19	21,51	45,9	51,15	16,0	11,77	28,0
29	21,62	45,2	51,30	16,6	11,79	26,8
August.. 8	21,78	44,5	51,47	17,2	11,85	25,6
18	21,97	44,0	51,68	17,9	11,93	24,6
28	22,17	43,6	51,91	18,5	12,04	23,7
Septemb. 7	22,40	43,4	52,17	19,2	12,18	23,0
17	22,65	43,5	52,46	20,0	12,34	22,6
27	22,91	43,7	52,76	20,8	12,54	22,4
October 7	23,19	44,2	53,08	21,6	12,76	22,6
17	23,48	44,9	53,40	22,4	13,00	23,1
27	23,78	45,8	53,74	23,1	13,28	23,9
Novemb. 6	24,06	47,0	54,06	23,8	13,56	25,1
16	24,35	48,3	54,39	24,5	13,86	26,7
26	24,63	49,7	54,70	25,1	14,17	28,5
Decemb.. 6	24,87	51,1	54,98	25,5	14,46	30,4
16	25,09	52,6	55,24	25,7	14,74	32,6
26	25,27	53,9	55,45	25,8	15,00	34,8
31	25,35	54,6	55,54	25,8	15,12	35,8
Mean Place, Jan. 0, 1829.	7.30.21,04	84.20.35,4	7.34.50,66	61.34.5,4	9.19.11,20	97.35.15,1

TRUE PLACES OF THE PRINCIPAL FIXED STARS.

1829.	22. Regulus.		23. α Ursæ Majoris.		24. β Leonis.	
	A. R. *in Time.*	N. P. D.	A. R. *in Time.*	N. P. D.	A. R. *in Time.*	N. P. D.
	H. M. S.	° ′ ″	H. M. S.	° ′ ″	H. M. S.	° ′ ″
January 0 N.	9.59.16, 63	77.12.10, 5	10.53.6, 72	27.20. 0, 2	11.40.20, 50	74.28.27, 0
10	16, 89	11, 8	7, 25	19.59, 8	20, 81	28, 7
20	17, 11	12, 9	7, 72	58, 9	21, 09	30, 0
30	17, 28	13, 7	8, 13	57, 5	21, 34	31, 1
February 9	17, 40	14, 3	8, 41	55, 6	21, 55	31, 7
19	17, 47	14, 6	8, 62	53, 3	21, 73	32, 1
March .. 1	17, 50	14, 7	8, 75	50, 8	21, 84	32, 1
11	17, 49	14, 5	8, 79	48, 2	21, 92	31, 9
21	17, 43	14, 2	8, 74	45, 5	21, 97	31, 3
31	17, 35	13, 7	8, 63	42, 9	21, 97	30, 6
April.... 10	17, 24	13, 2	8, 44	40, 4	21, 95	29, 7
20	17, 12	12, 5	8, 19	38, 3	21, 90	28, 8
30	16, 99	11, 9	7, 91	36, 5	21, 83	27, 7
May.... 10	16, 86	11, 2	7, 60	35, 0	21, 75	26, 7
20	16, 73	10, 6	7, 25	34, 0	21, 65	25, 7
30	16, 61	10, 0	6, 90	33, 5	21, 54	24, 8
June.... 9	16, 50	9, 5	6, 56	33, 5	21, 43	24, 0
19	16, 41	9, 0	6, 24	34, 0	21, 31	23, 3
29	16, 34	8, 7	5, 95	35, 0	21, 20	22, 8
July.... 9	16, 29	8, 4	5, 67	36, 4	21, 10	22, 4
19	16, 25	8, 2	5, 43	38, 1	21, 00	22, 2
29	16, 25	8, 1	5, 25	40, 2	20, 91	22, 2
August.. 8	16, 27	8, 2	5, 09	42, 7	20, 83	22, 3
18	16, 31	8, 4	5, 01	45, 4	20, 79	22, 7
28	16, 39	8, 8	4, 99	48, 4	20, 77	23, 2
Septemb. 7	16, 50	9, 3	5, 04	51, 4	20, 77	24, 0
17	16, 64	10, 0	5, 18	54, 6	20, 81	25, 0
27	16, 81	10, 9	5, 37	19. 57, 9	20, 88	26, 3
October 7	17, 01	12, 0	5, 65	20. 0, 8	20, 98	27, 7
17	17, 25	13, 3	6, 00	4, 3	21, 13	29, 4
27	17, 51	14, 7	6, 42	7, 2	21, 31	31, 3
Novemb. 6	17, 80	16, 4	6, 91	9, 9	21, 55	33, 2
16	18, 10	18, 2	7, 44	12, 3	21, 81	35, 3
26	18, 43	20, 0	8, 01	14, 4	22, 10	37, 6
Decemb. 6	18, 73	21, 8	8, 60	15, 8	22, 39	39, 7
16	19, 04	23, 5	9, 21	16, 8	22, 72	41, 8
26	19, 33	25, 1	9, 78	17, 3	23, 04	43, 8
31	19, 47	25, 8	10, 05	17, 3	23, 19	44, 6
Mean Place, Jan. 0, 1829.	9.59.15, 62	77.11.59, 3	10.53.6, 32	27.19.39, 0	11.40.20, 08	74.28.17, 9

TRUE PLACES OF THE PRINCIPAL FIXED STARS.

1829.	25. γ Ursæ Majoris.		26. δ Ursæ Majoris.		27. Spica ♍.	
	A. R. *in Time.*	N. P. D.	A. R. *in Time.*	N. P. D.	A. R. *in Time.*	N. P. D.
	H. M. S.	° ′ ″	H. M. S.	° ′ ″	H. M. S.	° ′ ″
January 0 N.	11.44.47,77	35.21.34,4	12.6.54,97	32. 1.19,6	13.16.11,89	100.15.50,7
10	48,24	34,9	55,47	20,3	12,22	52,6
20	48,65	34,8	55,94	20,4	12,54	54,6
30	49,04	34,2	56,37	19,9	12,84	56,5
February 9	49,37	33,0	56,74	18,8	13,12	58,2
19	49,63	31,4	57,06	17,2	13,36	15.59,8
March .. 1	49,81	29,4	57,29	15,0	13,58	16. 1,3
11	49,94	27,1	57,46	12,7	13,76	2,5
21	49,99	24,6	57,56	10,1	13,90	3,5
31	49,98	22,0	57,58	7,4	14,00	4,3
April ... 10	49,92	19,5	57,54	4,7	14,08	4,8
20	49,82	17,1	57,45	1. 2,1	14,12	5,1
30	49,66	14,9	57,29	0.59,7	14,13	5,3
May.... 10	49,45	13,0	57,11	57,5	14,12	5,3
20	49,24	11,4	56,88	55,7	14,09	5,1
30	48,99	10,2	56,62	54,3	14,03	4,8
June.... 9	48,74	9,5	56,34	53,4	13,96	4,5
19	48,48	9,2	56,04	52,9	13,87	4,0
29	48,22	9,4	55,74	52,9	13,79	3,4
July 9	48,00	9,9	55,45	53,3	13,67	2,8
19	47,77	11,0	55,16	54,2	13,56	2,1
29	47,56	12,5	54,91	55,5	13,44	1,4
August.. 8	47,37	14,4	54,67	57,4	13,32	0,7
18	47,25	16,5	54,48	0.59,6	13,21	16. 0,0
28	47,16	19,0	54,33	1. 2,1	13,11	15.59,4
Septemb. 7	47,12	21,8	54,23	4,9	13,03	58,8
17	47,14	24,7	54,19	8,0	12,97	58,4
27	47,20	27,8	54,22	11,2	12,95	58,1
October 7	47,34	31,1	54,32	14,5	12,95	58,0
17	47,53	34,3	54,49	18,0	13,01	58,1
27	47,81	37,5	54,74	21,4	13,11	58,5
Novemb. 6	48,13	40,6	55,05	24,7	13,25	15.59,2
16	48,51	43,6	55,43	27,8	13,44	16. 0,1
26	48,93	46,2	55,85	30,6	13,67	1,3
Decemb. 6	49,39	48,4	56,32	33,1	13,93	2,8
16	49,87	50,2	56,82	35,2	14,22	4,4
26	50,33	51,6	57,33	36,7	14,52	6,3
31	50,57	52,0	57,57	37,2	14,68	7,2
Mean Place, *Jan 0, 1829.*	11.44.47,89	35.21.15,2	12.6.55,42	32. 1. 0,5	13.16.11,75	100.15 54,4

TRUE PLACES OF THE PRINCIPAL FIXED STARS.

1829.	28. ζ Ursæ Majoris.		29. η Ursæ Majoris.		30. α Draconis.	
	A. R. *in Time.*	N. P. D.	A. R. *in Time.*	N. P. D.	A. R. *in Time.*	N. P. D.
	H.M.S.	° ′ ″	H.M.S.	° ′ ″.	H.M.S.	° ′ ″
January 0 N.	13 17.0,34	34.11. 1,2	13.40.46,59	39.50. 2,1	13.59.43,60	24.48.31,2
10	0,79	2,7	47,01	4,0	44,16	33,1
20	1,25	3,7	47,42	5,3	44,74	34,3
30	1,70	4,0	47,84	6,0	45,31	35,0
February 9	2,14	3,7	48,21	6,1	45,86	34,9
19	2,52	2,8	48,57	5,7	46,39	34,2
March .. 1	2,84	11. 1,3	48,88	4,6	46,86	32,9
11	3,10	10.59,4	49,14	3,0	47,29	31,0
21	3,30	57,0	49,36	50. 1,0	47,62	28,7
31	3,45	54,5	49,53	49.58,7	47,88	26,0
April... 10	3,53	51,7	49,65	56,2	48,06	23,1
20	3,55	48,9	49,72	53,5	48,16	20,0
30	3,51	46,1	49,72	50,7	48,16	17,0
May....10	3,42	43,5	49,68	48,1	48,10	14,0
20	3,28	41,0	49,59	45,6	47,94	11,2
30	3,09	38,9	49,46	43,3	47,73	8,7
June.... 9	2,86	37,2	49,30	41,4	47,45	6,5
19	2,61	35,8	49,09	39,8	47,09	4,8
29	2,32	35,0	48,88	38,6	46,71	3,5
July.... 9	2,04	34,6	48,64	37,9	46,31	2,7
19	1,74	34,7	48,38	37,6	45,85	2,5
29	1,45	35,3	48,13	37,8	45,40	2,7
August.. 8	1,16	36,3	47,87	38,4	44,93	3,5
18	0,88	37,9	47,60	39,6	44,50	4,8
28	0,66	39,8	47,39	41,1	44,09	6,5
Septemb. 7	0,44	42,1	47,19	43,1	43,69	8,7
17	0,29	44,8	47,02	45,4	43,37	11,4
27	0,18	47,8	46,90	48,1	43,12	14,3
October 7	0,14	51,0	46,83	51,1	42,93	17,6
17	0,17	54,4	46,81	54,3	42,84	21,1
27	0,28	10.58,0	46,87	49.57,7	42,84	24,8
Novemb. 6	0,44	11. 1,5	46,99	50. 1,1	42,93	28,6
16	0,69	5,0	47,17	4,7	43,12	32,3
26	0,98	8,4	47,41	8,1	43,39	36,0
Decemb. 6	1,35	11,5	47,71	11,2	43,76	39,4
16	1,75	14,3	48,06	14,3	44,20	42,5
26	2,21	16,7	48,44	16,9	44,70	45,2
31	2,44	17,6	48,63	18,0	44,96	46,3
Mean Place, Jan. 0, 1829.	13.17.1,46	34.10.45,5	13.40.47,68	39.49.48,9	13.59.45,80	24.48.16,9

TRUE PLACES OF THE PRINCIPAL FIXED STARS.

1829.	31. Arcturus.		32. ε Bootis.		33. 2 α Libræ.	
	A. R. *in Time.*	N. P. D.	A. R. *in Time.*	N. P. D.	A. R. *in Time.*	N. P. D.
	H.M.S.	° ′ ″	H.M.S.	° ′ ″	H.M.S.	° ′ ″
January.. 0 N.	14.7.51,55	69.55.27,4	14.37.30,37	62.12. 5,1	14.41.25,86	105.19.19,2
10	51,85	29,6	30,70	7,4	26,18	20,7
20	52,17	31,6	31,01	9,5	26,49	22,2
30	52,47	33,1	31,33	11,1	26,82	23,8
February 9	52,77	34,3	31,66	12,2	27,13	25,4
19	53,06	35,0	31,96	12,8	27,42	26,8
March... 1	53,30	35,3	32,23	12,9	27,69	28,1
11	53,52	35,1	32,49	12,5	27,94	29,3
21	53,69	34,6	32,72	11,6	28,16	30,3
31	53,83	33,7	32,92	10,4	28,35	31,2
April... 10	53,95	32,5	33,06	8,8	28,51	31,8
20	54,02	31,1	33,21	7,0	28,64	32,3
30	54,07	29,5	33,30	5,0	28,74	32,7
May.... 10	54,09	27,9	33,35	2,8	28,81	32,9
20	54,09	26,2	33,37	12. 0,7	28,86	33,0
30	54,05	24,6	33,35	11.58,6	28,87	32,9
June.... 9	54,00	23,1	33,29	56,7	28,86	32,8
19	53,92	21,7	33,21	54,9	28,82	32,5
29	53,82	20,6	33,11	53,4	28,76	32,2
July..... 9	53,70	19,6	32,98	52,1	28,67	31,8
19	53,57	18,9	32,82	51,1	28,56	31,4
29	53,42	18,5	32,67	50,5	28,44	30,9
August.. 8	53,27	18,3	32,48	50,2	28,31	30,4
18	53,11	18,4	32,30	50,2	28,16	29,8
28	52,96	18,8	32,13	50,6	28,02	29,2
Septemb. 7	52,83	19,5	31,96	51,4	27,89	28,6
17	52,71	20,6	31,81	52,6	27,77	28,1
27	52,62	21,9	31,67	54,0	27,66	27,6
October 7	52,56	23,5	31,57	55,8	27,59	27,3
17	52,55	25,4	31,54	11.57,9	27,55	27,1
27	52,58	27,5	31,54	12. 0,3	27,57	27,0
Novemb. 6	52,67	29,9	31,58	2,9	27,64	27,3
16	52,80	32,4	31,67	5,7	27,76	27,7
26	52,99	35,0	31,83	8,6	27,92	28,4
Decemb. 6	53,20	37,8	32,01	11,6	28,12	29,2
16	53,46	40,4	32,25	14,5	28,36	30,4
26	53,74	43,0	32,53	17,3	28,64	31,7
31	53,89	44,2	32,64	18,5	28,78	32,4
Mean Place, Jan. 0, 1829.	14.7.52,00	69.56.23,4	14.37.31,20	62.12. 0,6	14.41.26,16	105.19.27,4

TRUE PLACES OF THE PRINCIPAL FIXED STARS.

1829.	34. β Ursæ Minoris.		35. α Coronæ Borealis.		36. α Serpentis.	
	A. R. in Time.	N. P. D.	A. R. in Time.	N. P. D.	A. R. in Time.	N. P. D.
	H.M.S.	° ′ ″	H.M.S.	° ′ ″	H.M.S.	° ′ ″
January 0 N.	14.51.13,04	15. 8.55,0	15.27.26,19	62.42.17,1	15.35.50,48	83. 1.43,3
10	13,79	57,3	26,49	19,8	50,76	45,4
20	14,59	8.59,0	26,79	22,0	51,05	47,3
30	15,44	9. 0,1	27,10	23,9	51,34	49,0
February 9	16,31	0,5	27,42	25,3	51,64	50,4
19	17,15	9. 0,2	27,72	26,2	51,93	51,5
March .. 1	17,97	8.59,4	28,01	26,6	52,21	52,3
11	18,71	57,9	28,29	26,5	52,47	52,8
21	19,35	55,9	28,53	25,9	52,72	52,9
31	19,90	53,3	28,75	24,8	52,93	52,6
April. . . 10	20,32	50,5	28,96	23,4	53,13	52,0
20	20,61	47,4	29,12	21,6	53,29	51,2
30	20,75	44,3	29,26	19,6	53,44	50,1
May. . . . 10	20,76	41,1	29,36	17,5	53,56	48,9
20	20,62	38,0	29,43	15,2	53,63	47,6
30	20,35	35,1	29,46	13,0	53,70	46,3
June. . . . 9	19,96	32,5	29,47	10,8	53,72	44,9
19	19,45	30,3	29,42	8,7	53,72	43,6
29	18,83	28,5	29,35	6,9	53,68	42,4
July 9	18,13	27,2	29,27	5,3	53,62	41,2
19	17,37	26,4	29,14	4,0	53,53	40,2
29	16,56	26,1	28,98	2,9	53,41	39,4
August.. 8	15,73	26,4	28,82	2,2	53,28	38,7
18	14,89	27,1	28,63	1,9	53,13	38,3
28	14,08	28,4	28,44	1,9	52,97	38,0
Septemb. 7	13,29	30,2	28,25	2,3	52,81	38,0
17	12,62	32,4	28,06	3,1	52,65	38,1
27	12,00	35,1	27,89	4,3	52,51	38,6
October.. 7	11,50	38,1	27,76	5,8	52,39	39,2
17	11,11	41,4	27,65	7,7	52,31	40,1
27	10,84	45,0	27,60	9,9	52,26	41,3
Novemb. 6	10,73	48,8	27,59	12,3	52,26	42,7
16	10,79	52,6	27,64	15,0	52,31	44,3
26	10,98	8.56,3	27,74	17,9	52,42	46,1
Decemb.. 6	11,32	9. 0,0	27,88	20,8	52,55	48,2
16	11,80	3,3	28,07	23,8	52,74	50,2
26	12,39	6,4	28,31	26,6	52,96	52,4
31	12,73	7,8	28,44	28,0	53,08	53,4
Mean Place, Jan. 0, 1829.	14.51.17,64	15. 8.43,8	15.27.27,19	62.42.15,8	15.35.51,23	83. 1.47,1

TRUE PLACES OF THE PRINCIPAL FIXED STARS.

1829.	37. δ Ophiuchi.		38. Antares.		39. α Herculis.	
	A. R. *in Time.*	N. P. D.	A. R. *in Time.*	N. P. D.	A. R. *in Time.*	N. P. D.
	H.M.S.	° ′ ″	H. M. S.	° ′ ″	H.M.S.	° ′ ″
January 0 N.	16.5.22, 94	93.14.40, 9	16.18.55, 40	116.2.24, 0	17.6.50, 31	75.24.22, 1
10	23, 20	42, 5	55, 67	24, 5	50, 52	24, 3
20	23, 48	44, 0	55, 96	25, 1	50, 75	26, 5
30	23, 77	45, 5	56, 30	25, 9	51, 00	28, 4
February 9	24, 07	46, 8	56, 62	26, 7	51, 27	30, 0
19	24, 37	48, 0	56, 95	27, 5	51, 55	31, 3
March .. 1	24, 66	48, 9	57, 28	28, 4	51, 83	32, 2
11	24, 94	49, 5	57, 60	29, 3	52, 12	32, 7
21	25, 20	49, 9	57, 90	30, 1	52, 40	32, 7
31	25, 45	50, 0	58, 20	30, 8	52, 66	32, 4
April ... 10	25, 67	49, 8	58, 44	31, 5	52, 91	31, 6
20	25, 88	49, 4	58, 69	32, 1	53, 15	30, 4
30	26, 06	48, 9	58, 90	32, 7	53, 36	29, 0
May. ... 10	26, 21	48, 2	59, 09	33, 2	53, 55	27, 3
20	26, 32	47, 4	59, 22	33, 7	53, 71	25, 5
30	26, 42	46, 5	59, 33	34, 1	53, 84	23, 6
June.... 9	26, 47	45, 6	59, 42	34, 5	53, 94	21, 6
19	26, 50	44, 7	59, 48	34, 8	54, 02	19, 6
29	26, 49	43, 8	59, 49	35, 3	54, 05	17, 7
July.... 9	26, 45	43, 0	59, 45	35, 3	54, 04	16, 0
19	26, 37	42, 2	59, 37	35, 4	54, 00	14, 4
29	26, 27	41, 6	59, 28	35, 4	53, 91	13, 0
August.. 8	26, 15	41, 0	59, 15	35, 4	53, 80	11, 8
18	26, 00	40, 5	58, 99	35, 3	53, 65	11, 0
28	25, 85	40, 2	58, 82	35, 1	53, 49	10, 2
Septemb. 7	25, 68	39, 9	58, 64	34, 7	53, 31	9, 9
17	25, 53	39, 8	58, 46	34, 3	53, 12	9, 8
27	25, 37	39, 9	58, 29	33, 8	52, 93	10, 1
October 7	25, 24	40, 1	58, 14	33, 2	52, 75	10, 7
17	25, 13	40, 5	58, 03	32, 7	52, 59	11, 5
27	25, 07	41, 1	57, 95	32, 1	52, 46	12, 7
Novemb. 6	25, 04	41, 9	57, 90	31, 7	52, 37	14, 1
16	25, 06	42, 9	57, 90	31, 3	52, 33	16, 0
26	25, 13	44, 0	57, 96	31, 0	52, 33	17, 9
Decemb. 6	25, 23	45, 4	58, 09	30, 9	52, 38	20, 0
16	25, 39	46, 8	58, 28	31, 0	52, 48	22, 3
26	25, 60	48, 4	58, 48	31, 2	52, 63	24, 6
31	25, 72	49, 2	58, 60	31, 5	52, 71	25, 8
Mean Place, Jan. 0, 1829.	16. 5.23, 76	93.14.48, 0	16.18.56, 19	116.2.35, 9	17.6.51, 38	75.24.27, 9

TRUE PLACES OF THE PRINCIPAL FIXED STARS.

1829.	40. β Draconis.		41. α Ophiuchi.		42. γ Draconis.	
	A. R. *in Time.*	N. P. D.	A. R. *in Time.*	N. P. D.	A. R. *in Time.*	N. P. D.
	H. M. S.	° ′ ″	H. M. S.	° ′ ″	H. M. S.	° ′ ″
January 0 N.	17.26.32, 30	37.34. 3, 6	17.26.59, 09	77.18.22, 4	17.52.36, 46	38.29. 9, 9
10	32, 50	7, 0	59, 28	24, 6	36, 62	13, 3
20	32, 75	10, 1	59, 49	26, 7	36, 82	16, 5
30	33, 04	13, 0	59, 72	28, 6	37, 09	19, 5
February 9	33, 39	15, 3	26.59, 99	30, 2	37, 38	22, 0
19	33, 76	17, 1	27. 0, 27	31, 5	37, 75	24, 0
March .. 1	34, 16	18, 3	0, 55	32, 5	38, 13	25, 5
11	34, 57	18, 9	0, 83	33, 0	38, 52	26, 3
21	34, 97	18, 8	1, 11	33, 1	38, 92	26, 5
31	35, 37	18, 0	1, 38	32, 8	39, 31	26, 0
April.... 10	35, 74	16, 7	1, 65	32, 1	39, 69	25, 0
20	36, 09	14, 9	1, 88	31, 1	40, 04	23, 4
30	36, 38	12, 6	2, 08	29, 8	40, 37	21, 3
May.... 10	36, 63	9, 9	2, 31	28, 2	40, 65	18, 7
20	36, 85	6, 9	2, 49	26, 5	40, 90	15, 9
30	37, 00	3, 8	2, 64	24, 5	41, 08	12, 8
June.... 9	37, 11	34. 0, 5	2, 76	22, 7	41, 22	9, 6
19	37, 15	33. 57, 3	2, 85	20, 7	41, 30	6, 3
29	37, 11	54, 2	2, 91	18, 9	41, 32	3, 1
July.... 9	37, 03	51, 3	2, 92	17, 2	41, 26	29. 0, 0
19	36, 89	48, 6	2, 89	15, 5	41, 17	28. 57, 1
29	36, 70	46, 2	2, 83	14, 1	41, 01	54, 5
August.. 8	36, 48	44, 2	2, 72	12, 9	40, 80	52, 3
18	36, 19	42, 7	2, 60	12, 0	40, 54	50, 4
28	35, 89	41, 6	2, 44	11, 3	40, 25	49, 0
Septemb. 7	35, 54	41, 0	2, 27	10, 8	39, 93	48, 1
17	35, 19	40, 9	2, 08	10, 7	39, 60	47, 7
27	34, 83	41, 3	1, 89	10, 8	39, 25	47, 7
October 7	34, 49	42, 2	1, 71	11, 3	38, 92	48, 3
17	34, 17	43, 7	1, 54	12, 0	38, 60	49, 4
27	33, 89	45, 6	1, 41	13, 0	38, 29	51, 0
Novemb. 6	33, 65	47, 9	1, 30	14, 4	38, 02	53, 0
16	33, 47	50, 7	1, 24	15, 9	37, 82	55, 6
26	33, 34	53, 8	1, 23	17, 7	37, 66	28. 58, 4
Decemb. 6	33, 29	33. 57, 1	1, 25	19, 7	37, 57	29. 1, 6
16	33, 30	34. 0, 6	1, 32	21, 9	37, 54	5, 0
26	33, 40	4, 2	1, 45	24, 1	37, 59	8, 5
31	33, 47	6, 2	1, 53	25, 2	37, 65	10, 3
Mean Place, Jan. 0, 1829.	17.26.34, 42	37.34. 7, 4	17.27. 0, 17	77.18.29, 4	17.52.38, 50	38.29.15, 7

TRUE PLACES OF THE PRINCIPAL FIXED STARS.

1829.	43. δ Ursæ Minoris.		44. α Lyræ.		45. β Lyræ.	
	A. R. *in Time.*	N. P. D.	A. R. *in Time.*	N. P. D.	A. R. *in Time.*	N. P. D.
	H. M. S.	° ′ ″	H. M. S.	° ′ ″	H. M. S.	° ′ ″
January 0 N.	18.27. 5,46	3.24.46,2	18.31. 7,72	51.22. 5,0	18.43.44,78	56.49.40,4
10	5,54	49,5	7,82	8,1	44,86	43,3
20	6,32	52,8	7,97	11,1	45,00	46,2
30	7,80	55,8	8,17	13,9	45,17	48,9
February 9	9,91	24.58,6	8,41	16,4	45,39	51,3
19	12,53	25. 0,9	8,68	18,6	45,64	53,3
March .. 1	15,58	2,7	8,97	20,1	45,92	54,8
11	18,93	4,0	9,28	21,2	46,23	55,9
21	22,46	4,7	9,61	21,6	46,53	56,4
31	26,03	4,7	9,93	21,5	46,85	56,4
April ... 10	29,51	4,1	10,26	20,9	47,17	55,8
20	32,76	2,9	10,57	19,7	47,48	54,7
30	35,68	25. 1,3	10,87	17,9	47,77	53,2
May 10	38,18	24.59,1	11,15	15,8	48,05	51,1
20	40,19	56,5	11,39	13,3	48,30	48,8
30	41,65	53,5	11,61	10,5	48,51	46,2
June.... 9	42,50	50,6	11,78	7,5	48,70	43,4
19	42,74	47,4	11,91	4,5	48,84	40,5
29	42,35	44,2	12,00	22. 1,5	48,93	37,6
July 9	41,36	41,0	12,03	21.58,5	48,99	34,8
19	39,79	38,0	12,03	55,6	48,99	32,0
29	37,67	35,1	11,96	53,0	48,97	29,5
August.. 8	35,02	32,6	11,85	50,7	48,88	27,2
18	31,92	30,3	11,71	48,6	48,76	25,2
28	28,44	28,4	11,52	46,9	48,61	23,6
Septemb. 7	24,65	27,0	11,29	45,7	48,42	22,3
17	20,65	26,0	11,06	44,9	48,22	21,5
27	16,52	25,6	10,80	44,5	47,99	21,1
October 7	12,36	25,6	10,54	44,6	47,77	21,0
17	8,22	26,1	10,30	45,2	47,53	21,5
27	4,22	27,1	10,06	46,2	47,30	22,4
Novemb. 6	27. 0,45	28,6	9,86	47,7	47,10	23,7
16	26.57,06	30,6	9,69	49,6	46,94	25,4
26	54,11	33,0	9,56	51,9	46,80	27,5
Decemb. 6	51,70	35,8	9,47	54,5	46,72	29,9
16	49,92	38,9	9,45	21.57,4	46,67	32,6
26	48,81	42,2	9,45	22. 0,5	46,68	35,4
31	48,56	43,8	9,46	2,1	46,71	36,9
Mean Place, Jan. 0, 1829.	18.27.28,33	3.24.55,3	18.31. 9,17	51.22.13,5	18.43.46,13	56.49.49,5

TRUE PLACES OF THE PRINCIPAL FIXED STARS.

1829.	46. ζ Aquilæ.		47. δ Draconis.		48. δ Aquilæ.	
	A. R. *in Time.*	N. P. D.	A. R. *in Time.*	N. P. D.	A. R. *in Time.*	N. P. D.
	H. M. S.	° ′ ″	H. M. S.	° ′ ″	H. M. S.	° ′ ″
January 0 N.	18.57.32,02	76.22.52,4	19.12.26,93	22.38. 8,9	19.16.51,56	87.12.59,0
10	32,13	54,4	26,91	12,4	51,64	13. 0,5
20	32,25	56,4	26,99	15,8	51,76	1,8
30	32,41	22.58,3	27,18	19,2	51,91	3,2
February 9	32,62	23. 0,0	27,47	22,4	52,09	4,3
19	32,84	1,4	27,86	25,1	52,30	5,2
March .. 1	33,09	2,5	28,32	27,4	52,53	5,8
11	33,34	3,2	28,84	29,2	52,78	6,2
21	33,61	3,5	29,40	30,4	53,05	6,3
31	33,90	3,3	29,99	30,9	53,32	6,1
April ... 10	34,19	2,8	30,58	30,8	53,61	5,5
20	34,47	1,9	31,17	30,0	53,89	4,7
30	34,74	23. 0,6	31,72	28,6	54,16	3,5
May 10	35,00	22. 59,1	32,25	26,7	54,45	2,2
20	35,24	57,2	32,71	24,3	54,71	13. 0,7
30	35,46	55,2	33,11	21,6	54,94	12. 59,0
June.... 9	35,66	53,1	33,43	18,4	55,16	57,3
19	35,84	51,0	33,67	15,1	55,34	55,6
29	35,98	48,8	33,82	11,7	55,49	53,9
July 9	36,08	46,7	33,87	8,2	55,60	52,3
19	36,13	44,7	33,82	4,7	55,68	50,8
29	36,12	42,9	33,68	38. 1,4	55,72	49,5
August.. 8	36,10	41,3	33,45	37. 58,4	55,70	48,3
18	36,03	39,8	33,13	55,5	55,66	47,3
28	35,91	38,7	32,73	53,0	55,56	46,5
Septemb. 7	35,76	37,8	32,26	51,0	55,45	45,9
17	35,59	37,2	31,74	49,4	55,30	45,5
27	35,41	36,9	31,18	48,2	55,14	45,3
October 7	35,23	36,9	30,59	47,6	54,96	45,4
17	35,04	37,2	29,99	47,6	54,79	45,6
27	34,87	37,8	29,39	48,0	54,62	46,1
Novemb. 6	34,72	38,7	28,83	49,1	54,46	46,7
16	34,59	39,9	28,31	50,7	54,34	47,5
26	34,48	41,3	27,85	52,8	54,24	48,6
Decemb. 6	34,41	43,0	27,47	55,3	54,18	49,7
16	34,38	44,8	27,18	37. 58,2	54,17	51,1
26	34,42	46,8	26,99	38. 1,5	54,19	52,4
31	34,45	47,8	26,93	3,2	54,20	53,1
Mean Place, Jan. 0, 1829.	18.57.33,15	76.23. 1,4	19.12.29,91	22.38.21,1	19.16.52,65	87.13. 7,6

TRUE PLACES OF THE PRINCIPAL FIXED STARS.

1829.	49. γ Aquilæ.		50. α Aquilæ.		51. β Aquilæ.	
	A. R. *in Time.*	N. P. D.	A. R. *in Time.*	N. P. D.	A. R. *in Time.*	N. P. D.
	H. M. S.	° ′ ″	H. M. S.	° ′ ″	H. M. S.	° ′ ″
January..0 N.	19. 38. 6, 90	79.47.39, 5	19.42.25, 52	81.34.26, 7	19.46.53, 97	84. 0.40, 5
10	6, 96	41, 3	25, 57	28, 3	54, 02	42, 0
20	7, 07	43, 0	25, 67	29, 9	54, 12	43, 4
30	7, 20	44, 6	25, 81	31, 4	54, 24	44, 9
February 9	7, 37	46, 1	25, 97	32, 7	54, 40	46, 1
19	7, 55	47, 3	26, 16	33, 8	54, 58	47, 1
March... 1	7, 77	48, 3	26, 37	34, 8	54, 79	47, 9
11	8, 00	48, 9	26, 60	35, 4	55, 02	48, 5
21	8, 25	49, 2	26, 85	35, 6	55, 26	48, 6
31	8, 51	49, 1	27, 11	35, 5	55, 52	48, 5
April... 10	8, 79	48, 6	27, 38	35, 0	55, 80	48, 0
20	9, 06	47, 8	27, 66	34, 2	56, 07	47, 1
30	9, 34	46, 6	27, 94	33, 0	56, 36	46, 0
May.... 10	9, 62	45, 1	28, 22	31, 5	56, 64	44, 6
20	9, 88	43, 4	28, 49	29, 8	56, 91	42, 9
30	10, 13	41, 6	28, 74	28, 0	57, 17	41, 2
June.... 9	10, 36	39, 5	28, 97	26, 0	57, 40	39, 3
19	10, 56	37, 4	29, 18	24, 0	57, 61	37, 4
29	10, 74	35, 3	29, 35	22, 0	57, 78	35, 5
July.... 9	10, 86	33, 3	29, 48	20, 0	57, 92	33, 7
19	10, 95	31, 2	29, 58	18, 1	58, 03	32, 0
29	10, 99	29, 6	29, 63	16, 4	58, 08	30, 4
August.. 8	11, 00	28, 0	29, 64	14, 8	58, 09	29, 0
18	10, 96	26, 5	29, 60	13, 5	58, 06	27, 7
28	10, 89	25, 4	29, 53	12, 4	57, 99	26, 7
Septemb. 7	10, 76	24, 4	29, 42	11, 5	57, 89	26, 0
17	10, 62	23, 8	29, 28	10, 9	57, 75	25, 4
27	10, 45	23, 4	29, 12	10, 5	57, 59	25, 1
October 7	10, 27	23, 2	28, 94	10, 4	57, 42	25, 0
17	10, 10	23, 4	28, 78	10, 5	57, 26	25, 2
27	9, 92	23, 8	28, 60	10, 9	57, 09	25, 6
Novemb. 6	9, 76	24, 4	28, 45	11, 5	56, 93	26, 2
16	9, 63	25, 4	28, 31	12, 3	56, 79	27, 0
26	9, 52	26, 5	28, 21	13, 4	56, 69	28, 0
Decemb. 6	9, 44	27, 8	28, 12	14, 7	56, 60	29, 2
16	9, 39	29, 4	28, 07	16, 1	56, 55	30, 6
26	9, 39	31, 1	28, 07	17, 7	56, 55	32, 0
31	9, 40	32, 0	28, 08	18, 5	56, 55	32, 8
Mean Place, Jan. 0, 1829.	19.38. 7, 92	79.47.48, 7	19.42.26, 52	81.34.35, 7	19.46.54, 97	84. 0.49, 2

TRUE PLACES OF THE PRINCIPAL FIXED STARS.

1829.	52. 2 α Capricorni.		53. α Cygni.		54. 1st. 61 Cygni.	
	A. R. *in Time.*	N. P. D.	A. R. *in Time.*	N. P. D.	A. R. *in Time.*	N. P. D.
	H. M. S.	° ′ ″	H. M. S.	° ′ ″	H. M. S.	° ′ ″
January 0 N.	20.8.32, 67	103.3.56, 0	20.35.35, 44	45.19.22, 6	20.59.14, 23	52. 4. 55, 1
10	32, 71	56, 4	35, 38	25, 3	14, 18	4. 57, 4
20	32, 79	56, 7	35, 38	28, 3	14, 16	5. 0, 0
30	32, 91	56, 9	35, 41	31, 3	14, 20	2, 6
February 9	33, 06	57, 0	35, 52	34, 2	14, 30	5, 2
19	33, 24	56, 9	35, 66	36, 9	14, 42	7, 6
March .. 1	33, 43	56, 7	35, 84	39, 3	14, 60	9, 7
11	33, 66	56, 4	36, 07	41, 3	14, 80	11, 5
21	33, 90	55, 9	36, 35	42, 9	15, 03	12, 9
31	34, 17	55, 2	36, 65	44, 0	15, 29	13, 8
April ... 10	34, 45	54, 3	36, 99	44, 4	15, 62	14, 2
20	34, 75	53, 3	37, 33	44, 3	15, 94	14, 1
30	35, 04	52, 2	37, 70	43, 6	16, 28	13, 4
May... 10	35, 35	51, 0	38, 05	42, 4	16, 60	12, 1
20	35, 63	49, 7	38, 41	40, 6	16, 95	10, 4
30	35, 91	48, 5	38, 73	38, 4	17, 28	8, 3
June.... 9	36, 17	47, 3	39, 04	35, 8	17, 60	5, 9
19	36, 41	46, 2	39, 31	32, 9	17, 90	3, 1
29	36, 62	45, 1	39, 55	29, 8	18, 18	5. 0, 0
July.... 9	36, 78	44, 2	39, 73	26, 6	18, 41	4. 56, 9
19	36, 91	43, 4	39, 87	23, 3	18, 59	53, 7
29	37, 00	42, 9	39, 94	20, 0	18, 73	50, 5
August.. 8	37, 04	42, 5	39, 96	16, 8	18, 81	47, 3
18	37, 04	42, 2	39, 93	13, 8	18, 82	44, 3
28	36, 98	42, 1	39, 84	11, 0	18, 81	41, 6
Septemb. 7	36, 90	42, 1	39, 70	8, 5	18, 73	39, 1
17	36, 79	42, 2	39, 53	6, 3	18, 60	36, 9
27	36, 65	42, 5	39, 31	4, 6	18, 44	35, 0
October 7	36, 49	42, 8	39, 06	3, 3	18, 27	33, 6
17	36, 33	43, 2	38, 81	2, 4	18, 07	32, 5
27	36, 16	43, 6	38, 55	1, 9	17, 86	32, 0
Novemb. 6	36, 01	44, 0	38, 28	2, 2	17, 63	31, 8
16	35, 87	44, 4	38, 03	2, 8	17, 40	32, 2
26	35, 77	44, 9	37, 81	3, 9	17, 20	32, 9
Decemb. 6	35, 67	45, 3	37, 59	5, 5	17, 03	34, 2
16	35, 62	45, 8	37, 43	7, 6	16, 88	35, 8
26	35, 61	46, 2	37, 30	9, 9	16, 76	37, 8
31	35, 60	46, 4	37, 25	11, 3	16, 72	38, 9
Mean Place, Jan. 0, 1829.	20.8.33, 73	103.4.-2, 1	20.35.36, 49	45.19.37, 3	20.59.15, 08	52. 5. 9, 3

TRUE PLACES OF THE PRINCIPAL FIXED STARS.

1829.	55. α Cephei.		56. β Aquarii.		57. β Cephei.	
	A. R. *in Time.*	N. P. D.	A. R. *in Time.*	N. P. D.	A. R. *in Time.*	N. P. D.
	H. M. S.	° ′ ″	H. M. S.	° ′ ″	H. M. S.	° ′ ″
January.. 0 N.	21.14.28, 45	28. 7.54, 4	21.22.32, 31	96.19. 1, 4	21.26.23, 84	20.11. 0, 1
10	28, 24	7.57, 2	32, 31	2, 0	23, 50	2, 6
20	28, 12	8. 0, 1	32, 30	2, 6	23, 26	5, 6
30	28, 06	3, 3	32, 34	3, 1	23, 12	8, 7
February 9	28, 08	6, 5	32, 40	3, 4	23, 09	12, 0
19	28, 19	9, 7	32, 51	3, 6	23, 19	15, 3
March... 1	28, 36	12, 7	32, 61	3, 6	23, 39	18, 4
11	28, 62	15, 4	32, 78	3, 3	23, 69	21, 2
21	28, 95	17, 6	32, 96	2, 9	24, 09	23, 8
31	29, 35	19, 4	33, 17	2, 2	24, 57	25, 8
April.... 10	29, 77	20, 6	33, 42	1, 3	25, 10	27, 3
20	30, 23	21, 3	33, 68	19. 0, 1	25, 70	28, 3
30	30, 71	21, 3	33, 98	18. 58, 8	26, 33	28, 6
May.... 10	31, 20	20, 7	34, 28	57, 3	26, 98	28, 3
20	31, 70	19, 5	34, 56	55, 7	27, 62	27, 3
30	32, 17	17, 8	34, 86	54, 0	28, 24	25, 9
June.... 9	32, 62	15, 4	35, 15	52, 4	28, 82	23, 8
19	33, 03	12, 8	35, 43	50, 7	29, 37	21, 4
29	33, 39	9, 8	35, 69	49, 1	29, 85	18, 5
July.... 9	33, 69	6, 5	35, 91	47, 6	30, 24	15, 3
19	33, 93	8 .3, 1	36, 09	46, 3	30, 56	11, 9
29	34, 08	7. 59, 5	36, 24	45, 1	30, 76	8, 3
August.. 8	34, 16	56, 0	36, 35	44, 2	30, 88	4, 7
18	34, 15	52, 4	36, 42	43, 4	30, 89	11. 1, 1
28	34, 09	49, 0	36, 44	42, 9	30, 80	10. 57, 5
Septemb. 7	33, 93	45, 9	36, 41	42, 6	30, 59	54, 1
17	33, 70	43, 0	36, 36	42, 5	30, 29	51, 0
27	33, 40	40, 5	36, 27	42, 5	29, 91	48, 2
October 7	33, 07	38, 3	36, 15	42, 7	29, 42	45, 7
17	32, 68	36, 6	36, 02	43, 0	28, 89	43, 7
27	32, 26	35, 4	35, 87	43, 4	28, 31	42, 2
Novemb. 6	31, 81	34, 8	35, 72	44, 0	27, 68	41, 3
16	31, 39	34, 7	35, 57	44, 6	27, 05	40, 9
26	30, 94	35, 2	35, 43	45, 2	26, 42	41, 0
Decemb.. 6	30, 55	36, 2	35, 31	45, 9	25, 83	41, 8
16	30, 18	37, 9	35, 21	46, 6	25, 29	43, 2
26	29, 88	39, 9	35, 14	47, 3	24, 79	45, 0
31	29, 74	41, 1	35, 11	47, 7	24, 59	46, 2
Mean Place, Jan. 0, 1829.	21.14.29, 65	28. 8.12, 8	21.22.33, 14	96.19. 6, 0	21.26.25, 31	20.11.19, 8

TRUE PLACES OF THE PRINCIPAL FIXED STARS.

1829.	58. α Aquarii.		59. α Pegasi.		60. α Andromedæ.	
	A. R. *in Time.*	N. P. D.	A. R. *in Time.*	N. P. D.	A. R. *in Time.*	N. P. D.
	H. M. S.	° ′ ″	H. M. S.	° ′ ″	H. M. S.	° ′ ″
January 0 N.	21.56.59, 49	91. 8. 42, 7	22.56.14, 91	75.42.38, 4	23.59.34, 44	61.51. 3, 5
10	59, 43	43, 6	14, 81	39, 6	34, 29	4, 5
20	59, 41	44, 4	14, 73	40, 9	34, 16	5, 8
30	59, 41	45, 1	14, 67	42, 2	34, 04	7, 3
February 9	59, 43	45, 7	14, 64	43, 5	33, 95	8, 9
19	59, 51	46, 1	14, 64	44, 7	33, 88	10, 6
March .. 1	59, 60	46, 3	14, 66	45, 8	33, 83	12, 2
11	59, 72	46, 3	14, 73	46, 7	33, 82	13, 8
21	56. 59, 88	46, 1	14, 83	47, 3	33, 86	15, 2
31	57. 0, 06	45, 6	14, 96	47, 7	33, 94	16, 4
April.... 10	0, 28	44, 9	15, 13	47, 7	34, 06	17, 3
20	0, 52	43, 9	15, 33	47, 4	34, 22	17, 9
30	0, 78	42, 6	15, 57	46, 7	34, 43	18, 1
May.... 10	1, 06	41, 1	15, 85	45, 7	34, 67	18, 0
20	1, 35	39, 4	16, 13	44, 4	34, 95	17, 4
30	1, 64	37, 6	16, 42	42, 8	35, 24	16, 4
June.... 9	1, 94	35, 9	16, 72	40, 9	35, 56	15, 1
19	2, 22	34, 0	17, 03	38, 9	35, 89	13, 5
29	2, 49	32, 0	17, 32	36, 7	36, 21	11, 6
July 9	2, 73	30, 3	17, 60	34, 5	36, 54	9, 5
19	2, 94	28, 6	17, 85	32, 2	36, 84	7, 2
29	3, 11	27, 1	18, 06	30, 0	37, 11	4, 8
August.. 8	3, 25	25, 8	18, 25	27, 9	37, 37	51. 2, 4
18	3, 34	24, 7	18, 40	25, 9	37, 58	50. 59, 9
28	3, 39	23, 8	18, 50	24, 1	37, 76	57, 5
Septemb. 7	3, 40	23, 1	18, 57	22, 5	37, 90	55, 2
17	3, 37	22, 7	18, 59	21, 1	37, 99	53, 1
27	3, 31	22, 5	18, 57	19, 9	38, 04	51, 1
October.. 7	3, 21	22, 4	18, 52	19, 0	38, 05	49, 4
17	3, 11	22, 6	18, 45	18, 4	38, 03	47, 8
27	2, 97	22, 9	18, 34	18, 0	37, 97	46, 6
Novemb. 6	2, 83	23, 3	18, 23	17, 9	37, 88	45, 6
16	2, 69	23, 9	18, 10	18, 0	37, 78	45, 0
26	2, 56	24, 5	17, 97	18, 3	37, 66	44, 6
Decemb.. 6	2, 43	25, 3	17, 83	18, 9	37, 52	44, 6
16	2, 33	26, 1	17, 70	19, 7	37, 38	44, 9
26	2, 24	26, 9	17, 58	20, 7	37, 23	45, 5
31	2, 20	27, 3	17, 52	21, 2	37, 15	45, 9
Mean Place, Jan. 0, 1829.	21.57. 0, 09	91. 8.47, 5	22.56.15, 08	75.42.45, 9	23.59.34, 09	61.51.13, 4

A Catalogue of 100 *Principal Fixed Stars.*

JANUARY 1, 1825.

No.	Names of Stars.	A. R.	Ann. Var.	N. P. D. Bradley's Refr.	Ann. Var.
		H. M. S.	S.	° ′ ″	″
1	γ Pegasi	0. 4.14,3	+ 3,08	75.47.21	−19,9
2	α Cassiopeiæ	0.30.38,0	3,33	34.25.26	19,8
3	β Ceti	0.34.48,1	3,02	108.56.54	19,9
4	γ Cassiopeiæ	0.46.13,2	3,52	30.14. 0	19,7
5	Polaris	0.58.16,7	15,19	1.37.29	19,4
6	δ Cassiopeiæ	1.14.27,0	3,82	30.40.41	19,0
7	α Arietis	1.57.19,8	3,36	67.22.10	17,2
8	π Ceti	2.35.48,0	2,84	104.36.15	15,7
9	α ,,	2.53. 8,5	3,12	86.36. 8	14,4
10	12 Eridani	3. 4.38,4	2,55	119.40.54	14,6
11	α Persei	3.11.52,7	4,22	40.46.12	13,4
12	δ ,,	3.30.30,7	4,22	42.46.51	12,1
13	η Tauri	3.37. 6,2	3,53	66.26.36	11,7
14	γ Eridani	3.49.52,2	2,79	104. 0.44	10,7
15	γ Tauri	4. 9.51,1	3,40	74.48. 9	9,3
16	2 δ ,,	4.14. 1,4	3,43	72.58. 8	9,0
17	ε ,,	4.18.24,6	3,49	71.12.58	8,6
18	Aldebaran	4.25.53,4	3,43	73.51. 2	7,7
19	Capella	5. 3.46,7	4,41	44.11.28	4,4
20	Rigel	5. 6. 8,0	2,88	98.24.39	4,5
21	β Tauri	5.15.14,3	3,79	61.32.59	3,7
22	γ Orionis	5.15.45,2	3,20	83.48.59	3,8
23	δ ,,	5.23. 4,4	3,06	90.26.10	3,2
24	α Leporis	5.25. 0,9	2,63	107.57.15	3,1
25	ε Orionis	5.27.20,4	3,03	91.19.17	2,8
26	σ ,,	5.29.58,0	3,01	92.42.31	2,7
27	ζ ,,	5.31.56,1	3,01	92. 2.33	2,4
28	γ Leporis	5.37.10,2	2,49	112.30.41	1,6
29	κ Orionis	5.39.27,7	2,84	99.44.20	1,6
30	α ,,	5.45.42,2	3,25	82.38. 1	1,1
31	β Aurigæ	5.46.41,8	4,39	45. 4.53	− 1,2
32	γ Geminorum	6.27.36,2	3,46	73.27.34	+ 2,4
33	ε ,,	6.33. 9,8	3,69	64.42.17	2,9
34	Sirius	6.37.26,1	2,64	106.28.57	4,7
35	δ Geminorum	7. 9.40,0	3,59	67.42.12	6,0
36	Castor	7.23.25,3	3,85	57.44.13	7,2
37	Procyon	7.30. 8,4	3,15	84.20. 1	8,9
38	Pollux	7.34.35,9	3,69	61.33.33	8,1
39	α Hydræ	9.18.59,4	2,95	97.54.15	15,3
40	ε Leonis	9.35.54,3	3,43	65.25.28	16,2
41	Regulus	9.59. 2,8	3,21	77.10.51	17,3
42	ζ Leonis	10. 6.56,5	3,36	65.42.50	17,6
43	γ ,,	10.10.18,8	3,33	69.16.35	17,9
44	β Urs. Majoris	10.51.13,6	3,71	32.40.53	19,1
45	α ,,	10.52.51,0	3,80	27.18.22	19,3
46	δ Leonis	11. 4.47,5	3,21	68.31. 7	19,6
47	β ,,	11.40. 7,8	3,07	74.26.58	20,1
48	β Virginis	11.41.35,1	3,12	87.14.58	20,3
49	γ Urs. Majoris	11.44.35,0	3,21	35.19.55	20,0
50	δ ,,	12. 6.43,4	3,00	31.59.39	20,2
51	κ Draconis	12.25.57,6	2,62	19.14.45	20,0
52	δ Virginis	12.46.47,7	3,02	85.38.57	19,7
53	Spica Virginis	13.15.59,2	3,15	100.14.39	18,9
54	ζ Urs. Majoris	13.16.51,8	2,41	34. 9.29	19,0
55	η ,,	13.40.38,2	3,37	39.48.37	18,1
56	α Draconis	13.59.39,4	1,61	24.47. 7	17,3
57	Arcturus	14. 7.41,1	2,73	69.54. 7	19,0
58	θ Bootis	14.19.14,5	2,04	37.20.12	16,9
59	π ,,	14.32.30,3	2,81	72.49.33	15,8
60	ε ,,	14.37.20,8	2,61	62.10.59	15,5

A Catalogue of 100 Principal Fixed Stars—continued.

JANUARY 1, 1825.

No.	Names of Stars.	A. R.	Ann. Var.	N. P. D. Bradley's Refr.	Ann. Var.
		H. M. S.	S.	° ′ ″	″
61	1 α Libræ	14. 41. 1,5	+ 3,30	105. 15. 45	+15,4
62	2 α ,, ...	14. 41. 13,0	+ 3,30	105. 18. 27	15,4
63	β Urs. Min.....	14. 51. 18,9	− 0,31	15. 7. 45	14,8
64	β Libræ.....	15. 7. 36,2	+ 3,20	98. 43. 48	13,7
65	α Cor. Bòr.....	15. 27. 17,0	2,54	62. 41. 26	12,5
66	α Serpentis	15. 35. 39,4	2,95	83. 1. 1	11,7
67	δ Scorpii.....	15. 50. 0,3	3,53	112. 6. 51	10,7
68	1 β ,, ...	15. 55. 13,3	3,47	109. 19. 2	10,4
69	δ Ophiuchi	16. 5. 11,2	3,13	93. 14. 9	9,7
70	Antares	16. 18. 41,5	3,66	116. 2. 1	8,7
71	ζ Herculis.....	16. 34. 41,9	2,26	58. 4. 28	6,8
72	α ,, ...	17. 6. 40,5	2,73	75. 24. 10	4,6
73	β Draconis	17. 26. 29,1	1,34	37. 33. 55	2,9
74	α Ophiuchi	17. 26. 49,1	2,78	77. 18. 17	3,2
75	γ Draconis.....	17. 52. 32,9	+ 1,39	38. 29. 13	+ 0,7
76	δ Urs. Min.....	18. 28. 44,8	−19,12	3. 25. 6	− 2,4
77	α Lyræ	18. 31. 1,1	+ 2,03	51. 22. 25	3,0
78	c Draconis	18. 39. 15,1	1,16	34. 38. 6	3,4
79	β Lyræ	18. 43. 37,3	2,20	56. 50. 5	3,8
80	ζ Aquilæ	18. 57. 22,2	2,75	76. 23. 22	4,9
81	51 Draconis	19. 0. 59,4	1,35	36. 52. 7	5,3
82	δ ,, ...	19. 12. 29,7	0,02	22. 38. 46	6,2
83	κ Cygni.....	19. 13. 3,3	1,38	36. 56. 57	6,4
84	δ Aquilæ.....	19. 16. 40,6	3,01	87. 13. 35	6,6
85	ι Cygni.....	19. 25. 17,6	1,51	38. 38. 21	7,3
86	γ Aquilæ.....	19. 37. 56,5	2,85	79. 48. 22	8,3
87	α ,, ...	19. 42. 14,8	2,93	81. 35. 12	8,9
88	β ,, ...	19. 46. 43,2	2,95	84. 1. 24	8,6
89	1 α Capricorni	20. 7. 56,6	3,34	103. 2. 28	10,7
90	2 α ,, ...	20. 8. 20,4	3,34	103. 4. 46	10,8
91	α Delphini.....	20. 31. 30,9	2,78	74. 41. 56	12,4
92	α Cygni.....	20. 35. 28,3	2,05	45. 20. 27	12,5
93	1st 61 Cygni.....	20. 59. 3,8	2,77	52. 6. 21	17,6
94	α Cephei.....	21. 14. 23,9	1,45	28. 9. 13	15,0
95	β Aquarii.....	21. 22. 20,6	3,15	96. 20. 8	15,5
96	β Cephei.....	21. 26. 22,1	0,81	20. 12. 23	15,6
97	δ Capricorni.....	21. 37. 22,3	3,33	106. 54. 58	16,1
98	α Aquarii.....	21. 56. 47,7	3,09	91. 9. 57	17,0
99	α Pegasi.....	22. 56. 3,2	2,98	75. 44. 3	19,0
100	α Andromedæ.....	23. 59. 21,8	3,08	61. 52. 33	19,8

This Catalogue is deduced from the latest Observations that have been made, up to the present time.

Royal Observatory,
Aug. 1, 1826.

Elements for computing the principal Lunar Occultations of the fixed Stars.

MARCH 1829.

Conjunction in A.R.		Diff. Dec.	H. M.	Orb. Ang.	A. R.	☽'s Declin.	Nearest Approach.	Time of Nearest Approach.
D. H. M. S.		′ ″	′ ″	° ′	H. M. S.	° ′ ″	′ ″	D. H. M. S.
☽		☽						
β ♍	2. 4.18.10	10.59 N.	36.56	N.79.37 E.	20.11.23	15. 7.42 S.	10.48	2. 4.14.57
♑ ♏	4. 3. 0.48 *	26.32 N.	38. 8	73.37	22. 7.47	8.11.17 S.	25.27	4. 2.49. 1
ζ ♐	7. 4.35.15	43.21 S.	36.49	72.43	1. 4.48	5.56.48 N.	41.23	7. 4.56.14
ο ♐	7.18. 2. 7	1.20 N.	36.14	73.42	1.36.23	8.18.56	1.17	7.18. 1.30
1 δ ♉	10.13.52.25	26. 7 S.	32.55	82.33	4.13. 5	16.41.52	25.54	10.13.58.36
2 δ ♉	10.14.23.10	18.20 S.	32.54	82.38	4.14.15	16.44. 2	18.11	10.14.27.28
α ♉	10.19.37.26	55.24 N.	32.40	N.83.29 E.	4.26. 8	17. 4.47	55. 2	10.19.25.52
1 α ♋	15.21.57.30	65.44 N.	29.37	S. 77.28 E.	8.46.36	13.21.59	64.10	15.22.26.23
2 α ♋	15.23.14.42	43. 2 N.	29.36	77.19	8.49. 9	13.13.40	41.59	15.23.33.51
ξ ♌	16.16.22.44	48.22 S.	29.33	75.33	9.22.45	11.14.36	46.50	16.15.58.14
ο ♌	16.21.16. 5	1. 0 S.	29.32	75. 6	9.32. 3	10.38.46	0.58	16.21. 9.34
π ♌	17. 7. 6. 0 *	29.48 N.	29.33	74.17	9.51.12	9.21.16	28.41	17. 7.22.24
τ ♌	19. 5.24.58	70. 0 S.	29.46	71.58	11.19.10	2.37.38 N.	66.33	19. 4.41.16
♑ ♒	21.10.52.49	61.30 S.	30.22	72.38	13. 1. 8	5.38.58 S.	58.42	21.10.16.33
κ ♒	22.18.35.16	44.47 S.	30.52	74.50	14. 3.49	10.12.26	43.13	22.18.12.29
γ ♎	24.10. 7.39	38.54 S.	31.38	79.20	15.26. 0	14.51.32	38.14	24. 9.53.59
♑ ♎	24.18.31.11 *	35. 3 N.	31.51	80.32	15.44. 7	15.38. 8	34.34	24.18.42. 2
φ Oph.	25.11.25.43	41.25 S.	32.17	S. 83. 8 E.	16.21.23	16.55.15	41. 8	25.11.16.30
β ♍	29.13. 5.47	13.58 N.	35.36	N.79.39 E.	20.11.24	15. 4.41	13.45	29.13. 1.33
♑ ♏	31.13.22.33	28. 0 N.	37. 6	73.39	22. 7.48	8. 9.47 S.	26.53	31.13. 9.48

Conjunction in A. R.	Diff. Dec.	H. M.	Orb. Ang.	A. R.	☽'s Declin.	Nearest Approach.	Time of Nearest Approach.
D. H. M. S.	′ ″	′ ″	° ′	H. M. S.	° ′ ″	′ ″	D. H. M. S.
☽	☽						
β ♍ 2.17.21.36	5.54 N.	37.47	N. 79.26 E.	20.11.23	15.12.47 S.	5.48	2.17.19.53
δ ♏ 4.15.32.40	26.34 N.	38. 7	73.27	22. 7.47	8.11.15 S.	25.28	4.15.20.45
ζ ♐ 7.18.33. 3	36. 8 S.	35.39	72.37	1. 4.48	6. 4. 1 N.	34.29	7.18.51.13
o ♐ 8. 8.27.37	9.19 N.	35. 0	73.37	1.36.23	8.26.57	8.56	8. 8.23. 7
1 δ ♉ 11. 6.33. 1	16.52 S.	32. 2	82.33	4.13. 6	16.51. 7	16.44	11. 6.37. 7
2 δ ♉ 11. 7. 4.35	9. 7 S.	32. 1	82.38	4.14.16	16.53.18	9. 2	11. 7. 6.47
α ♉ 11.12.26.51	64.35 N.	31.48	N. 83.31 E.	4.26. 8	17.13.59	64.10	11.12.13. 6
1 α ♋ 16.15.42.49	70.11 N.	29.42	S. 77.22 E.	8.46.36	13.26.26	68.30	16.16.13.50
2 α ♋ 16.16.59.48 *	47.24 N.	29.42	77.14	8.49. 9	13.18. 3	46.14	16.17.20.59
ξ ♌ 17.10. 4.49	44.54 S.	29.38	75.26	9.22.45	11.18. 5	43.27	17. 9.41.57
o ♌ 17.14.51.28	2.10 N.	29.37	75. 0	9.32. 3	10.41.57	2. 6	17.14.52.36
π ♌ 18. 0.46. 7	32.24 N.	29.36	74. 9	9.51.12	9.23.52	31.10	18. 1. 4. 3
τ ♌ 19.23. 7. 5	69 57 S.	29.41	71.51	11.19.10	2.37.42 N.	66.28	19.22.23. 2
δ ♍ 22. 4.53.35	63.57 S.	30.10	72.35	13. 1. 8	5.41.23 S.	61. 1	22. 4.15.31
κ ♍ 23.12.46.53	48.13 S.	30.44	74.46	14. 3.48	10.15.49	46.32	23.12.22. 9
γ ♎ 25. 4.18.26	43. 4 S.	31.49	79.19	15.25.59	14.55.39	42.20	25. 4. 3.23
δ ♎ 25.12.38.31 *	30.50 N.	32. 6	80.30	15.44. 7	15.42.18	30.26	25.12.48. 2
φ Oph. 26. 5.21.50	45.41 S.	32.43	S. 83. 9 E.	16.21.22	16.59.29	45.22	26. 5.11.51

Elements for computing the principal Lunar Occultations of the fixed Stars.

MAY 1829.

Conjunction in A. R.	Diff. Dec.	H. M.	Orb. Ang.	A. R.	☽'s Declin.	Nearest Approach.	Time of Nearest Approach.
D. H. M. S.	′ ″	′ ″	° ′	H. M. S.	° ′ ″	′ ″	D. H. M. S.
☽	☽						
ζ ♐ 1. 1.37.30	44.41 S.	36.26	N.72.39 E.	1. 4.48	5.55.29 N.	42.40	1. 1.59.27
o ♐ 1.15. 8.34	0.33 N.	36.16	73.38	1.36.23	8.18.11	0.32	1.15. 8.18
1 δ ♉ 4. 9.20.52	23.22 S.	34.20	82.27	4.13. 5	16.44.36	23.10	4. 9.26.14
2 δ ♉ 4. 9.50.21	15.34 S.	34.19	82.32	4.14.15	16.46.48	15.26	4. 9.53.53
α ♉ 4.14.51.17	58.27 N.	34. 7	N.83.24 E.	4.26. 7	17. 7.50	58. 4	4.14.39.28
2 α ♋ 9.13.59.32	50.46 N.	30. 4	S.77.21 E.	8.49. 8	13.21.27	49.32	9.14.21.44
ξ ♌ 10. 6.54.55	40.28 S.	29.49	75.33	9.22.44	11.22.33	39.11	10. 6.34.36
o ♌ 10.11.39.57	6.53 N.	29.45	75. 5	9.32. 2	10.46.42	6.39	10.11.43.31
π ♌ 10.21.32.24	37.39 N.	29.41	74.15	9.51.11	9.29. 8	36.13	10.21.53. 3
τ ♌ 12.19.51.48	63.23 S.	29.43	71.53	11.19.10	2.44.17 N.	60.14	12.19.11.59
δ ♍ 15. 1.16.32	58.25 S.	30.36	72.29	13. 1. 8	5.35.53 S.	55.43	15. 0.42. 4
κ ♍ 16. 8.37.28	44.37 S.	31.23	74.39	14. 3.49	10.12.16	43. 1	16. 8.14.53
γ ♎ 17.23.20.26	42.54 S.	32.27	79. 8	15.26. 1	14.55.33	42. 8	17.23. 5.29
δ ♎ 18. 7.31.23 *	30.10 N.	32.40	80.20	15.44. 8	15.43. 2	29.45	18. 7.40.41
φ Oph. 19. 0. 0. 4	48. 6 S.	33. 7	S. 82.57 E.	16.21.24	17. 1.56	47.45	18.23.49.22
β ♍ 23. 0.46.34	0.45 S.	34.57	N.79.42 E.	20.11.26	15.19.18	0.44	23. 0.46.48
δ ♏ 25. 2.41.27	12.56 N.	35.23	73.36	22. 7.49	8.24.43 S.	12.24	25. 2.35.15
ζ ♐ 28. 9. 2.38	51.38 S.	35.27	72.31	1. 4.48	5.48.35 N.	49.16	28. 9.28.54
o ♐ 28.22.56.26	5. 2 S.	35.20	N.73.28 E.	1.36.24	8.12.39	4.50	28.22.58.52

Elements for computing the principal Lunar Occultations of the fixed Stars.

APRIL 1829.

Conjunction in A.R.		Diff. Dec.	H. M.	Orb. Ang.	A. R.	☽'s Declin.	Nearest Approach.	Time of Nearest Approach.
D. H. M. S.		′ ″	′ ″	° ′	H. M. S.	° ′ ″	′ ″	D. H. M. S.
☽		☽						
ο ♓	4. 5. 0.53	0.33 N.	36.43	N. 73.44 E.	1.36.23	8.18. 9 N.	0.31	4. 5. 0.38
1 δ ♉	6.23.15.43	27.13 S.	33.54	82.32	4.13. 5	16.40.46	26.59	6.23.21.59
2 δ ♉	6.23.45.35	19.25 S.	33.52	82.37	4.14.15	16.42.57	19.15	6.23.50. 0
α ♉	7. 4.50.49 *	54.19 N.	33.37	N. 83.29 E.	4.26. 7	17. 3.43	53.58	7. 4.39.48
1 α ♋	12. 4.55. 7	65.40 N.	29.46	S. 77.29 E.	8.46.36	13.21.56	64. 6	12. 5.23.47
2 α ♋	12. 6.11.58 *	42.59 N.	29.45	77.21	8.49. 9	13.13.38	41.56	12. 6.30.58
ξ ♌	12.23.17. 2	48.18 S.	29.36	75.33	9.22.45	11.14.42	46.46	12.22.52.35
ο ♌	13. 4. 4. 3	0.55 S.	29.34	75. 7	9.32. 2	10.38.52	0.53	13. 4. 3.40
π ♌	13.13.59.43 *	29.55 N.	29.33	74.17	9.51.12	9.21.23	28.48	13.14.16.10
τ ♌	15.12.20.24	69.56 S.	29.47	71.56	11.19.10	2.37.42 N.	66.29	15.11.36.41
♑ ♍	17.17.38. 0	62. 6 S.	30.35	72.37	13. 1. 8	5.39.35 S.	59.16	17.17. 1.36
κ ♍	19. 1. 3.18	46. 2 S.	31.12	74.46	14. 3.49	10.13.41	44.25	19, 0.40. 3
γ ♎	20.16. 8. 0	41. 6 S.	32. 0	79.18	15.26. 1	14.53.45	40.24	20.15.53.42
δ ♎	21. 0.25.57	32.39 N.	32.11	80.29	15.44. 8	15.40.33	32.13	21. 0.36. 2
♦ Oph.	21.17.10.35	44.14 S.	32.32	S. 83. 7 E.	16.21.24	16.58. 4	43.55	21.17. 0.47
β ♈	25.19.25. 6	9.35 N.	34.47	N. 79.39 E.	20.11.25	15. 9. 1	9.26	25.19.22. 8
δ ♏	27.21. 6.55	24. 1 N.	35.54	73.37	22. 7.48	8.13.42 S.	23. 2	27.20.55.36

Elements for computing the principal Lunar Occultations of the fixed Stars.

MAY 1829.

Conjunction in A. R.	Diff. Dec.	H. M.	Orb. Ang.	A. R.	☽'s Declin.	Nearest Approach.	Time of Nearest Approach.
D. H. M. S.	′ ″	′ ″	° ′	H. M. S.	° ′ ″	′ ″	D. H. M. S.
☽	☽						
ζ ♓ 1. 1.37.30	44.41 S.	36.26	N.72.39 E.	1. 4.48	5.55.29 N.	42.40	1. 1.59.27
o ♓ 1.15. 8.34	0.33 N.	36.16	73.38	1.36.23	8.18.11	0.32	1.15. 8.18
1 δ ♉ 4. 9.20.52	23.22 S.	34.20	82.27	4.13. 5	16.44.36	23.10	4. 9.26.14
2 δ ♉ 4. 9.50.21	15.34 S.	34.19	82.32	4.14.15	16.46.48	15.26	4. 9.53.53
α ♉ 4.14.51.17	58.27 N.	34. 7	N.83.24 E.	4.26. 7	17. 7.50	58. 4	4.14.39.28
2 α ♋ 9.13.59.32	50.46 N.	30. 4	S.77.21 E.	8.49. 8	13.21.27	49.32	9.14.21.44
ξ ♌ 10. 6.54.55	40.28 S.	29.49	75.33	9.22.44	11.22.33	39.11	10. 6.34.36
o ♌ 10.11.39.57	6.53 N.	29.45	75. 5	9.32. 2	10.46.42	6.39	10.11.43.31
π ♌ 10.21.32.24	37.39 N.	29.41	74.15	9.51.11	9.29. 8	36.13	10.21.53. 3
τ ♌ 12.19.51.48	63.23 S.	29.43	71.53	11.19.10	2.44.17 N.	60.14	12.19.11.59
♑ ♍ 15. 1.16.32	58.25 S.	30.36	72.29	13. 1. 8	5.35.53 S.	55.43	15. 0.42. 4
κ ♍ 16. 8.37.28	44.37 S.	31.23	74.39	14. 3.49	10.12.16	43. 1	16. 8.14.53
γ ♎ 17.23.20.26	42.54 S.	32.27	79. 8	15.26. 1	14.55.33	42. 8	17.23. 5.29
♑ ♎ 18. 7.31.23 *	30.10 N.	32.40	80.20	15.44. 8	15.43. 2	29.45	18. 7.40.41
φ Oph. 19. 0. 0. 4	48. 6 S.	33. 7	S.82.57 E.	16.21.24	17. 1.56	47.45	18.23.49.22
β ♍ 23. 0.46.34	0.45 S.	34.57	N.79.42 E.	20.11.26	15.19.18	0.44	23. 0.46.48
♑ ♏ 25. 2.41.27	12.56 N.	35.23	73.36	22. 7.49	8.24.43 S.	12.24	25. 2.35.15
ζ ♓ 28. 9. 2.38	51.38 S.	35.27	72.31	1. 4.48	5.48.35 N.	49.16	28. 9.28.54
o ♓ 28.22.56.26	5. 2 S.	35.20	N.73.28 E.	1.36.24	8.12.39	4.50	28.22.58.52

Elements for computing the principal Lunar Occultations of the fixed Stars.

JUNE 1829.

	Conjunction in A.R.		Diff. Dec.	H. M.	Orb. Ang.	A. R.	☽'s Declin.	Nearest Approach.	Time of Nearest Approach.
		D. H. M. S.	′ ″	′ ″	° ′	H. M. S.	° ′ ″	′ ″	D. H. M. S.
	☽		☽						
2	α ♋	5.22. 8.15	63.13 N.	30.24	S. 77.25 E.	8.49. 8	13.33.56 N.	61.42	5.22.35.26
	ξ Ω	6.14.52.43	27.22 S.	30. 4	75.36	9.22.44	11.35.41	26.30	6.14.39. 8
	o Ω	6.19.35. 4	20.11 N.	29.59	75. 9	9.32. 2	11. 0. 1	19.30	6.19.45.25
	π Ω	7. 5.22.52 *	51.11 N.	29.51	74.18	9.51.11	9.42.43	49.17	7. 5.50.44
	τ Ω	9. 3.36.19	49.47 S.	29.38	71.50	11.19.10	2.57.55 N.	47.18	9. 3. 4.53
	♑ ♍	11. 9.21.29	47.14 S.	30.22	72.23	13. 1. 8	5.24.40 S.	45. 1	11. 8.53.14
	κ ♍	12.16.57.12	36.10 S.	31.14	74.30	14. 3.49	10. 3.47	34.51	12.16.38.38
	γ ♎	14. 7.46.38	38.36 S.	32.32	78.57	15.26. 1	14.51.14	37.53	14. 7.32.59
	♑ ♎	14.15.56.12	33.29 N.	32.51	80. 9	15.44. 9	15.39.43	33. 0	14.16. 6.40
	φ Oph.	15. 8.18.31	46.49 S.	33.25	S. 82.45 E.	16.21.24	17. 0.39	46.26	15. 8. 7.54
	β ♈	19. 7.10.13	11. 6 S.	35.46	N. 79.52 E.	20.11.26	15.29.37	10.56	19. 7.13.30
	♑ ♏	21. 8. 3.52	1.21 S.	35.52	73.40	22. 7.50	8.38.55 S.	1.18	21. 8. 4.30
	ζ ♐	24.14.28. 6	65. 0 S.	34.57	72.25	1. 4.49	5.35.18 N.	61.58	24.15. 1.49
	o ♐	25. 4.35.51	17.20 S.	34.44	73.21	1.36.24	8. 0.25	16.36	25. 4.44.26
1	δ ♉	28. 1.29.53	26. 3 S.	33.26	82. 3	4.13. 5	16.41.58	25.48	28. 1.36.21
2	δ ♉	28. 2. 0.12	18. 7 S.	33.25	82. 9	4.14.15	16.44.17	17.57	28. 2. 4.39
	α ♉	28. 7. 9.10	57. 6 N.	33.18	N. 82.59 E.	4.26. 8	17. 6.31	56.40	28. 6.56.37

Elements for computing the principal Lunar Occultations of the fixed Stars.

JULY 1829.

Conjunction in A.R.		Diff. Dec.	H. M.	Orb. Ang.	A. R.	☽'s Declin.	Nearest Approach.	Time of Nearest Approach.
D. H. M. S.		′ ″	′ ″	° ′	H. M. S.	° ′ ″	′ ″	D. H. M. S.
☽		☽						
ξ ♌	3.22.34.26	15.17 S.	30.12	S. 75.44 E.	9.22.44	11.47.47 N.	14.49	3.22.26.57
o ♌	4. 3.15. 3 *	32.36 N.	30. 8	75.17	9.32. 1	11.12.28	31.32	4. 3.31.33
π ♌	4.12.59.19	64.22 N.	29.58	74.24	9.51.11	9.55.55	62. 0	4.13.33.58
τ ♌	6.11. 5.15	34.11 S.	29.35	71.52	11.19. 9	3.13.33 N.	32.29	6.10.43.40
♑ ♍	8.17.13.20	31.41 S.	30. 1	72.20	13. 1. 8	5. 9. 6 S.	30.12	8.16.54. 7
κ ♍	10. 1.17. 4	22. 5 S.	30.46	74.22	14. 3.49	9.49.41	21.16	10. 1. 5.28
γ ♎	11.16.43.33	27.48 S.	32. 8	78.47	15.26. 1	14.40.25	27.16	11.16.33.27
♑ ♎	12. 0.59.47	43.27 N.	32.28	79.57	15.44. 8	15.29.44	42.47	12. 1.13.49
φ Oph.	12.17.32.50	38.43 S.	33.11	S. 82.33 E.	16.21.24	16.52.32	38.23	12.17.23.46
β ♏	16.15.41.31	16. 1 S.	36.36	N. 80. 5 E.	20.11.27	15.34.29	15.47	16.15.46. 2
♑ ♏	18.15.12.46	12.25 S.	36.56	73.49	22. 7.51	8.49.56 S.	11.56	18.15.18.23
o ♐	22. 9.48.48	32.18 S.	34.58	73.19	1.36.25	7.45.32 N.	30.56	22.10. 4.43
γ ♉	25. 5.45.38	72.59 N.	33. 3	81.41	4.10. 5	16.25.27	72.13	25. 5.26.27
1 δ ♉	25. 7. 5. 8	36.20 S.	33. 1	81.53	4.13. 6	16.31.43	35.59	25. 7.14.27
2 δ ♉	25. 7.35.52	28.22 S.	33. 0	81.58	4.14.16	16.34. 5	28. 5	25. 7.43. 4
α ♉	25.12.49.17 *	47.23 N.	32.52	N. 82.50 E.	4.26. 8	16.56.51	47. 1	25.12.38.28
ξ ♌	31. 5.36.13	9.34 S.	30.11	S. 75.57 E.	9.22.44	11.53.30	9.17	31. 5.31.36
o ♌	31.10.16.43	38.51 N.	30. 7	75.28	9.32. 1	11.18.43	37.36	31.10.36. 8
π ♌	31.20. 0.23	71.36 N.	29.59	74.36	9.51.11	10. 3.10	69. 1	31.20.38.26

Elements for computing the principal Lunar Occultations of the fixed Stars.

OCTOBER 1829.

Conjunction in A.R.		Diff. Dec.	H. M.	Orb. Ang.	A. R.	☽'s Declin.	Nearest Approach.	Time of Nearest Approach.
D. H. M. S.		′ ″	′ ″	° ′	H. M. S.	° ′ ″	′ ″	D. H. M. S.
☽		☽						
γ ♎	1.14.26.30	6.56 S.	30.38	S. 78.41 E.	15.26. 0	14.19.30 S.	6.48	1.14.23.50
♑ ♎	1.23. 9.27	63.47 N.	30.47	79.50	15.44. 7	15. 9.21	62.46	1.23.31.23
φ Oph.	2.16.43.35	19.46 S.	31.10	S. 82.24 E.	16.21.23	16.33.33	19.36	2.16.38.33
β ♍	6.21.31.50	11.13 S.	34.47	N. 80.23 E.	20.11.26	15.29.41	11. 3	6.21.35. 3
♑ ♏	8.22.23.16	16.39 S.	36.49	74. 5	22. 7.51	8.54. 6 S.	16. 1	8.22.30.43
o ♐	12.13. 7.52	46.54 S.	37.44	73.22	1.36.27	7.31. 6 N.	44.56	12.13.29.13
γ ♉	15. 4. 5.32	59.45 N.	35.23	81.35	4.10. 8	16.12.19	59. 6	15. 3.50.41
1 δ ♉	15. 5.19.55	49.30 S.	35.19	81.47	4.13. 8	16.18.40	48.59	15. 5.31.55
2 δ ♉	15. 5.48.41	41.29 S.	35.18	81.52	4.14.18	16.21. 4	41. 4	15. 5.58.40
α ♉	15.10.42.30 *	34.37 N.	35. 3	N. 82.42 E.	4.26.11	16.44.11	34.20	15.10.34.59
ξ ♌	21. 0.27.44	8.53 S.	30. 0	S. 76. 6 E	9.22.45	11.54. 6	8.38	21. 0.23.28
o ♌	21. 5. 9.43	39.57 N.	29.55	75.39	9.32. 3	11.19.45	38.43	21. 5.29.34
τ ♌	23.13. 8. 6	17.42 S.	29.37	72. 8	11.19.10	3.30. 0	16.51	23.12.57. 6
β ♍	24. 1.12.44	64.11 S.	29.34	71.50	11.41.48	1.39.25 N.	60.59	24. 0.32. 6
η ♍	24.16.53. 3	62.36 S.	29.38	71.47	12.11.11	0.45.37 S.	59.28	24.16.13.25
♑ ♍	25.19.19.47	11.22 S.	29.52	72.23	13. 1. 7	4.48.44	10.50	25.19.12.53
γ ♎	28.20.19.55	10.58 S.	30.53	78.36	15.26. 0	14.23.32	10.45	28.20.15.42
♑ ♎	29. 4.58.28 *	59.18 N.	31. 2	79.45	15.44. 7	15.13.50	58.21	29. 5.18.52
φ Oph.	29.22.25. 2	25. 6 S.	31.21	S. 82.18 E.	16.21.23	16.38.52	24.52	29.22.18.35

Elements for computing the principal Lunar Occultations of the fixed Stars.

SEPTEMBER 1829.

Conjunction in A.R.		Diff. Dec.	H. M.	Orb. Ang.	A.R.	☽'s Declin.	Nearest Approach.	Time of Nearest Approach.
D. H. M. S.		′ ″	′ ″	° ′	H. M. S.	° ′ ″	′ ″	D. H. M. S.
☽		☽						
♑	1. 6.48.21	11.24 S.	29.39	S. 72.27 E.	13. 1. 7	4.48.45 S.	10.52	1. 6.41.24
κ ♒	2.15.29.44	0.42 S.	29.58	74.25	14. 3.48	9.28.15	0.40	2.15.29.21
γ ♎	4. 8.23. 4	7.17 S.	30.48	78.42	15.26. 0	14.19.52	7. 9	4. 8.20.18
♑ ♎	4.17. 2.30	63.28 N.	31. 2	79.52	15.44. 8	15. 9.41	62.29	4.17.24. 5
φ Oph.	5.10.25.35	19.57 S.	31.35	S. 82.24 E.	16.21.24	16.33.44	19.46	5.10.20.34
β ♍	9.12.33.11	10.37 S.	36. 1	N. 80.21 E.	20.11.27	15.29. 4	10.28	9.12.36. 8
♑ ♏	11.11.52. 1	16. 4 S.	37.48	74. 4	22. 7.51	8.53.31 S.	15.27	11.11.59. 1
o ♐	15. 2. 0.40	47.48 S.	37.12	73.25	1.36.27	7.30.10 N.	45.48	15. 2.22.40
γ ♉	17.18.35.19	57.18 N.	34.16	81.37	4.10. 7	16. 9.51	56.41	17.18.20.41
1 δ ♉	17.19.52. 9	51.58 S.	34.12	81.50	4.13. 8	16.16.10	51.26	17.20. 5. 6
2 δ ♉	17.20.21.52	43.58 S.	34.11	81.54	4.14.18	16.18.34	43.31	17.20.32.44
α ♉	18. 1.25.19	32. 2 N.	33.56	N. 82.45 E.	4.26.10	16.41.35	31.47	18. 1.18.10
ξ ♌	23.18. 0.33	12.24 S.	29.53	S. 76. 8 E.	9.22.44	11.50.39	12. 2	23.17.54.36
o ♌	23.22.43.32 *	36.31 N.	29.50	75.40	9.32. 2	11.16.21	35.23	23.23. 1.43
π ♌	24. 8.31.45	70.19 N.	29.45	74.47	9.51.11	10. 1.51	67.51	24. 9. 8.58
τ ♌	26. 6.41.26	19.50 S.	29.34	72.10	11.19. 9	3.27.54	18.53	26. 6.29. 7
β ♒	26.18.45.10	65.52 S.	29.35	71.55	11.41.48	1.37.46 N.	62.37	26.18. 3.41
♑ ♒	28.12.55. 0	11.12 S.	29.45	72.27	13. 1. 7	4.48.33 S.	10.40	28.12.48.11
κ ♒	29.21.30. 0	0.16 S.	30. 2	74.21	14. 3.48	9.27.48	0.15	29.21.29.51

Elements for computing the principal Lunar Occultations of the fixed Stars.

OCTOBER 1829.

Conjunction in A.R.	Diff. Dec.	H. M.	Orb. Ang.	A. R.	☽'s Declin.	Nearest Approach.	Time of Nearest Approach.
D. H. M. S.	′ ″	′ ″	° ′	H. M. S.	° ′ ″	′ ″	D. H. M. S.
☽	☽						
γ ♎ 1.14.26.30	6.56 S.	30.38	S. 78.41 E.	15.26. 0	14.19.30 S.	6.48	1.14.23.50
δ ♎ 1.23. 9.27	63.47 N.	30.47	79.50	15.44. 7	15. 9.21	62.46	1.23.31.23
φ Oph. 2.16.43.35	19.46 S.	31.10	S. 82.24 E.	16.21.23	16.33.33	19.36	2.16.38.33
β ♐ 6.21.31.50	11.13 S.	34.47	N. 80.23 E.	20.11.26	15.29.41	11. 3	6.21.35. 3
δ ♏ 8.22.23.16	16.39 S.	36.49	74. 5	22. 7.51	8.54. 6 S.	16. 1	8.22.30.43
o ♑ 12.13. 7.52	46.54 S.	37.44	73.22	1.36.27	7.31. 6 N.	44.56	12.13.29.13
γ ♉ 15. 4. 5.32	59.45 N.	35.23	81.35	4.10. 8	16.12.19	59. 6	15. 3.50.41
1 δ ♉ 15. 5.19.55	49.30 S.	35.19	81.47	4.13. 8	16.18.40	48.59	15. 5.31.55
2 δ ♉ 15. 5.48.41	41.29 S.	35.18	81.52	4.14.18	16.21. 4	41. 4	15. 5.58.40
α ♉ 15.10.42.30 *	34.37 N.	35. 3	N. 82.42 E.	4.26.11	16.44.11	34.20	15.10.34.59
ξ ♌ 21. 0.27.44	8.53 S.	30. 0	S. 76. 6 E	9.22.45	11.54. 6	8.38	21. 0.23.28
o ♌ 21. 5. 9.43	39.57 N.	29.55	75.39	9.32. 3	11.19.45	38.43	21. 5.29.34
τ ♌ 23.13. 8. 6	17.42 S.	29.37	72. 8	11.19.10	3.30. 0	16.51	23.12.57. 6
β ♍ 24. 1.12.44	64.11 S.	29.34	71.50	11.41.48	1.39.25 N.	60.59	24. 0.32. 6
η ♍ 24.16.53. 3	62.36 S.	29.38	71.47	12.11.11	0.45.37 S.	59.28	24.16.13.25
δ ♍ 25.19.19.47	11.22 S.	29.52	72.23	13. 1. 7	4.48.44	10.50	25.19.12.53
γ ♎ 28.20.19.55	10.58 S.	30.53	78.36	15.26. 0	14.23.32	10.45	28.20.15.42
δ ♎ 29. 4.58.28 *	59.18 N.	31. 2	79.45	15.44. 7	15.13.50	58.21	29. 5.18.52
φ Oph. 29.22.25. 2	25. 6 S.	31.21	S. 82.18 E.	16.21.23	16.38.52	24.52	29.22.18.35

Elements for computing the principal Lunar Occultations of the fixed Stars.

NOVEMBER 1829.

Conjunction in A. R.	Diff. Dec.	H. M.	Orb. Ang.	A. R.	☽'s Declin.	Nearest Approach.	Time of Nearest Approach.
D. H. M. S.	′ ″	′ ″	° ′	H. M. S.	° ′ ″	′ ″	D. H. M. S.
☽	☽						
β ♍ 3. 4. 3. 7	19.41 S.	33.52	N.80.23 E.	20.11.26	15.38.10 S.	19.24	3. 4. 8.56
ϑ ♏ 5. 6.30.11	24.25 S.	35.30	74. 2	22. 7.51	9. 1.54 S.	23.28	5. 6.41.32
ο ♐ 8.23.53. 7	47.59 S.	37.12	73.12	1.36.27	7.30. 0 N.	45.56	9. 0.15.29
γ ♉ 11.14.49.12	64.58 N.	35.56	81.26	4.10. 8	16.17.33	64.14	11.14.33. 2
1 δ ♉ 11.16. 2.27	44.10 S.	35.53	81.39	4.13. 9	16.24. 0	43.42	11.16.13.11
2 δ ♉ 11.16.30.47	36. 7 S.	35.51	81.44	4.14.19	16.26.27	35.44	11.16.39.29
α ♉ 11.21.19.46	40.25 N.	35.41	N.82.34 E.	4.26.11	16.49.59	40. 4	11.21.10.59
ξ ♌ 17. 7.54.21	2.56 N.	30.26	S. 76. 6 E.	9.22.46	12. 5.51	2.51	17. 7.55.45
ο ♌ 17.12.32.16	51.45 N.	30.20	75.37	9.32. 3	11.31.28	50. 8	17.12.57.42
τ ♌ 19.20. 8. 3	7.27 S.	29.34	72. 0	11.19.11	3.40.11	7. 5	19.20. 3.23
β ♍ 20. 8.12.44	54.33 S.	29.34	71.44	11.41.49	1.48.58 N.	51.48	20. 7.38. 1
η ♍ 20.23.54.31	54. 3 S.	29.36	71.37	12.11.11	0.37. 8 S.	51.17	20.23.19.59
ϑ ♍ 22. 2.24.35	4.55 S.	29.51	72.12	13. 1. 8	4.42.21	4.41	22. 2.21.34
κ ♍ 23.10.48.39	1.12 N.	30.22	74. 7	14. 3.48	9.26.25	1. 9	23.10.49.18
γ ♎ 25. 3. 9. 3	12. 1 S.	31.14	S. 78.24 E.	15.26. 0	14.24.36	11.47	25. 3. 4.24
β ♈ 30. 9.13.40	32.54 S.	33.55	N. 80.29 E.	20.11.26	15.51.25	32.27	30. 9.23.18

Conjunction in A.R.		Diff. Dec.	H. M.	Orb. Ang.	A. R.	☽'s Declin.	Nearest Approach.	Time of Nearest Approach.
D. H. M. S.		′ ″	′ ″	° ′	H. M. S.	° ′ ″	′ ″	D. H. M. S.
☽		☽						
☿ ♏	2.12. 3.57	39.19 S.	34.50	N.74. 0 E.	22. 7.50	9.16.49 S.	37.47	2.12.22.37
ο ♐	6. 8.12.46	56.47 S.	35.59	73. 2	1.36.27	7.21.12 N.	54.19	6. 8.40.24
γ ♉	9. 0.43. 6	65.31 N.	35.31	81.11	4.10. 9	16.18. 5	64.44	9. 0.26. 8
1 δ ♉	9. 1.57.13	43.27 S.	35.28	81.24	4.13. 9	16.24.43	42.58	9. 2. 8.13
2 δ ♉	9. 2.25.52	35.19 S.	35.28	81.29	4.14.19	16.27.15	34.56	9. 2.34.43
α ♉	9. 7.17.52 *	41.56 N.	35.21	N.82.20 E.	4.26.11	16.51.30	41.34	9. 7. 8.22
ξ ♌	14.16.18.38 *	18.35 N.	30.59	S.76.11 E	9.22.47	12.21.26	18. 3	14.16.27.14
ο ♌	14.20.51.19 *	67.40 N.	30.51	75.42	9.32. 4	11.47.19	65.34	14.21.23.51
τ ♌	17. 3.45.10	9.29 N.	29.44	71.59	11.19.11	3.57. 1	9. 2	17. 3.51. 5
β ♍	17.15.46.53	37.51 S.	29.38	71.41	11.41.50	2. 5.35 N.	35.56	17.15.22.47
η ♍	18. 7.27.59	37.52 S.	29.35	71.34	12.11.12	0.21. 2 S.	35.55	18. 7. 3.43
☿ ♍	19.10. 3.51	9.43 N.	29.43	72. 5	13. 1. 9	4.27.48	9.15	19.10. 9.53
κ ♍	20.18.41. 6	12.58 N.	30.13	73.57	14. 3.49	9.14.44	12.27	20.18.48.13
γ ♎	22.11.13.12	5. 1 S.	31.13	78.10	15.26. 0	14.17.38	4.54	22.11.11.13
☿ ♎	22.19.46.15 *	63.10 N.	31.29	79.19	15.44. 8	15.10. 0	62. 4	22.20. 8.33
φ Oph.	23.12.55.59	25.31 S.	32. 2	S.81.51 E.	16.21.23	16.39.19	25.15	23.12.49.13
β ♑	27.15.27.11	43.14 S.	34.43	N.80.40 E.	20.11.26	16. 1.46	42.40	27.15.39.18
☿ ♏	29.17.13.56	54.47 S.	35.18	74. 8	22. 7.50	9.32.19 S.	52.41	29.17.39.24

RULES

FOR COMPUTING

AN OBSERVED OCCULTATION.

Dr. Young's Method.

I.—Observe, if possible, the difference of apparent altitudes at the time of immersion or emersion; or at least the altitude of the moon, the altitude of the star being computed from the true latitude of the place.

Example:—Supposing the immersion of ♑ ♒ to be observed at Greenwich, the 5th of Jan. 1824, at $3^h.\ 46^m.\ 50^s$, the moon's altitude, corrected for refraction, being $29°.\ 15'.\ 37''$: we have for the declination of the star, $8°.\ 39'.\ 17''$, that of the moon being $7°.\ 47'.\ 12''$ at the observed time, and the difference of declination, from the elements in the Nautical Almanac, $55'.\ 31''$: the moon's right ascension, $22^h.\ 7^m.\ 2^s$, that of the star being $22^h.\ 7^m.\ 32^s$: the sun's right ascension, $19^h.\ 2^m.\ 19^s$; the star's, less the sun's, $3^h.\ 5^m.\ 13^s$, which, deducted from $3^h.\ 46^m.\ 50^s$, gives $41^m.\ 37^s$ for the star's horary angle. With these elements we proceed to compute the altitude of the star.

✱'s Log. rising		$41'.\ 37''$	3.21594
Log. cos. declination		$8°.\ 39'.\ 17''$	9.99503
cos. Lat.		$51°.\ 28'.\ 40''$	9.79436
n. n.	1012		3.00533

			°	′	″
N. S.	49800	Mer. A.	29.	52.	3
N. S.	48788	Alt. ✱	29.	12.	5
		Obs. Alt. ☽	29.	15.	37
		Difference		3.	32
		☽'s Par. in Alt.		47.	9
		Diff. tr. Alt.		50.	41

II.—Having found the difference of the true altitudes from the difference of the apparent altitudes combined with the parallax of the moon, add together the squares of the semidiameter, properly augmented, and of the difference of the true altitudes, and subtract the square of the difference of the apparent altitudes, the remainder being the square of the true distance.

Example:—The semid....	14′. 54″	= 894,	sq....	799236
Diff. true alt..	50. 41	= 3041,		9247681
Diff. app. alt..	3. 32	= 212,	A. C.	99955056
True dist.....	52. 42,6	= 3162.6		10001973

III.—From the difference of declination at the conjunction, reduced in the ratio of the radius to the sine and cosine of the orbital angle, we obtain the nearest distance of the star from the orbit, and the distance of the nearest point of the orbit from the point of conjunction in right ascension; or, in the Nautical Almanac for 1827, and the succeeding years, we find these arcs already computed. The square of the nearest distance, subtracted from that of the true distance, gives the square of the orbital distance from the point of nearest approach, which converted into time from the moon's hourly motion, and applied to the time of the nearest approach, shows the true time of the immersion for the meridian of Greenwich.

Example:—Nearest distance...	50′. 31″ = 3031″	sq.	9186961
True distance.....		sq.	10001973
Dist. from n. point	15′. 2″, 8 = 902.8	sq.	815012

Now the hourly motion being 29′. 42″, the distance 15′. 2″,8 becomes equivalent to $30^m.\ 24^s$, and the time of nearest approach being $3^h.\ 17^m.\ 1^s$, the time of immersion at Greenwich becomes $3^h.\ 47^m.\ 25^s$, instead of $3^h.\ 46^m.\ 50^s$ as supposed; and the error of observation, or of computation, would be 35^s of time.

Mr. HENDERSON'S Improvement on Dr. YOUNG'S Method.

When neither of the altitudes has been observed, the computation of that of the moon is liable to considerable uncertainty, as depending upon the supposed longitude by account: and Mr. THOMAS HENDERSON, of Edinburgh, has remarked, that the method proposed by Dr. YOUNG does not exhibit so rapid a tendency to con-

verge to the true longitude as would be desirable. He has therefore proposed to substitute the reduction of the parallax to the moon's orbit, as employed by Dr. YOUNG in the calculation of a predicted occultation, and as explained in the following Rules:

I.—Compute the altitude of the star for the time of observation, and from the reduced or geocentric latitude of the place, as shown, in the Nautical Almanac for 1826, Add. P. 1; and find the parallactic angle P ✱ Z, the sine of which is equal to the secant of the altitude multiplied by the cosine of the reduced latitude, and by the sine of the horary angle; this angle having the sign + before the star has passed the meridian, and — afterwards. The complement to 90° of the moon's orbital angle P ☽ ☽′ is to have the sign —, when the moon's nearest approach to the star and the orbital angle have the same denomination N. or S., and + when they are of different denominations. The sum of these two angles is the complement of the parallactic orbital angle Z ☽ ☽′, or the complementary angle, with its proper sign.

Example:—In the case of ♉ ♒, the star's reduced altitude has been found 29°. 22′. 48″, N. A. 1826. Add. P. 7; then,

Log. sec. alt.....	0.05979	Orb. A.....	65°. 29′ N. E. ☽ N.
cos. red. lat....	9.79609	Compl....	—24. 31
sin. H. A.	9.25669	Par. A....	— 7. 27 ✱ W. of Mer.
sin. Par. A. 7°. 27′	9.11257	C. P. O. A.	—31. 58

Remark 1.—The parallactic angle must always be reckoned from that pole of the equator, which is either north or south, accordingly as the nearest approach is marked N. or S. in the Elements of the Occultation; and therefore, when this pole is of a contrary denomination to that of the latitude of the place, the parallactic angle is to be taken obtuse, or equal to the supplement of the angle found by the above rule. But when the latitude is less than the star's declination, and of the same denomination, an ambiguity may arise, respecting the magnitude of the parallactic angle, in proceeding by the rule above. This ambiguity may be removed by resolving, according to the common rules of spherical trigonometry, the triangle P ✱ Z, formed by the reduced zenith, the star, and the proper pole of the equator.

2.—It may sometimes happen that the complementary angle exceeds 180°: in this case its supplement to 360°, with the sign reversed, is to be used.

II.—Add together the proportional logarithm of the Moon's reduced horizontal parallax, the logarithmic secant of the star's altitude, and the logarithmic cosecant of the complementary angle; the sum will be the proportional logarithm of the orbital parallax, which must have the same sign as the complementary angle. To this

logarithm add the logarithmic tangent of the complementary angle; the sum will be the proportional logarithm of the perpendicular parallax, which must have the contrary sign to that of the moon's nearest approach, when the complementary angle is less than 90°, and the same sign when it is greater; considering + as belonging to the moon's distance, when she is N. of the star, and — when S.

Example:—The P. L. of the reduced horizontal parallax is 5225. (See N. A. 1826. Add. P. 4.)

P. L. red. H. P.			.5225
Log. sec. Alt.			.0598
cosec. compl. A.			.2762
P. L.	— 24′. 56″	O. P.	.8585
Log. tan. compl. A.			9.7952
P. L.	— 39′. 57″	P. P.	.6537

III.—The sum of the moon's nearest approach and the perpendicular parallax may be considered as one of the sides, and the moon's semidiameter, without augmentation, as the hypotenuse, of a right-angled plane triangle, of which the other side is to be ascertained: it will have the sign + in the case of an immersion, and — in that of an emersion. The sum of this quantity and the orbital parallax being reduced to time, by means of the moon's horary motion, and then applied to the time of observation by addition or subtraction, accordingly as it bears the sign + or —, will give the time of the nearest approach, reckoned according to the meridian of the place of observation, which being compared with the time of the same phenomenon for Greenwich, as given in the Ephemeris, the longitude of the place from Greenwich will be obtained.

Example:—

Nearest distance....	+ 50′ 31″		
Perpendicular Par..	— 39. 57		
Sum	+ 10. 34		
Semidiameter	14. 46		
Sum	25. 20	P. L...	8516
Difference	4. 12	P. L...	1.6320
		2	2.4836
Side	+ 10. 19		1.2418
Orbital Par.	— 24. 56		
	— 14. 37		

The space 14′. 37″, reduced into time, at the rate of 29′. 42″ for an hour, gives us 29ᵐ. 32ˢ to be subtracted from 3ʰ. 46ᵐ. 50ˢ, the time of the immersion, and makes 3ʰ. 17ᵐ. 18ˢ for that of the nearest approach, differing 17ˢ from the solar time at Greenwich.

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